AUTHOR INDEX

Aaronson, S. A. 360, 368, 369
Abe, O. 361, 370
Abelev, G. I. 363, 373
Abelson, H. T. 323, 324, 333
Abrams, R. 132, 144
Ackrell, B. A. C. 271, 279
Adams, D. 365, 374
Adams, R. L. P. 90
Adams, W. B. 178, 179, 182
Adamson, D. J. 185, 198
Affara, N. A. 26, 33
Aguilera, A. 132, 144
Ahluwalia, G. S. 338, 356
Ahmed, M. 210, 212, 215
Ahrens, E. H., Jr. 57, 62
Akao, M. 247, 250
Akiyama, M. 253, 267
Akman, S. A. 129, 132, 143
Alam, T. C. 115, 118, 122
Albers-Schonberg, G. 54, 57, 58, 60
Albert, K. A. 93, 101, 108
Alberts, A. W. 54–63
Alderson, T. 125, 142
Algranati, I. D. 83, 89
Alhonen, L. 81–91
Alhonen-Hongisto, L. 82–85, 87, 89–91
Alitalo, K. 83–85, 89, 361, 371
Allan, P. W. 185, 198
Allegra, C. J. 15, 20
Allison, J. P. 261, 263, 268
Allmann, D. W. 65, 75
Altmann, S. 362, 372
Ames, B. N. 241, 249
Anagnoste, B. 93, 100, 107
Anders, M. W. 248
Andersen, R. D. 241, 249
Anderson, W. B. 25, 30, 33, 201, 204–206, 208, 213
Anderson, P. S. 54–56, 61
Anderson, R. G. W. 65, 67, 71, 75, 76
Ando, N. 361, 370
Andreesen, R. 205, 214
Annet, R. G. 276, 280
Antoniades, H. N. 360, 362, 368, 373
Appelgren, L. E. 309, 311, 318
Aragon, J. J. 284, 286, 302, 305, 306
Arai, M. 55, 56, 58, 59, 61, 63
Arebalo, R. E. 65, 66, 68, 72, 75
Arias, I. M. 268, 318
Arimura, H. 363, 373
Arnesen, M. 84, 90
Arrendale, R. F. 53, 60
Asai, T. 147, 150, 164
Ashmun, R. A. 131, 144
Assenza, S. P. 150, 165
Atkins, F. L. 85, 90
Atkinson, B. 365, 374
Atkinson, T. 323, 324, 332
Augery, Y. L. 362, 371
Austen, K. F. 307, 309, 311, 315, 317, 319
Averdunk, R. 159, 166
Avery, T. L. 131, 144, 168, 172, 174–176, 178, 180, 181, 188, 199
Avigad, G. 283, 305
Avigan, J. 65, 66, 72, 75
Azarnoff, D. L. 313, 319

Baba, M. 126, 143
Bachur, N. R. 129, 132, 143
Bacon, P. E. 125, 126, 142
Bacon, S. P. 57, 62
Baer, H. P. 172, 181
Bajaj, S. 132, 144
Bakay, B. 170, 178, 179, 181, 182
Balaban, G. 84, 90
Baldessarini, R. J. 93, 100, 107
Balis, M. E. 125, 142
Ball, H. A. 308, 309, 311, 314, 318
Baló-Banga, H. M. 147, 164, 168, 180
Baló-Banga, J. M. 185, 198
Balzarini, J. 126, 143
Banuelos, M. 286, 306
Barbacid, M. 360, 361, 369, 371
Barber, K. E. 363, 373
Barbet, J. 262, 268
Barnabei, O. 25–34
Barnes, K. C. 205, 206, 214
Barrett, A. J. 255, 267, 268

Barrick, A. 261, 263, 268
Bartrons, R. 283, 305, 306
Basagni, M. 85, 90
Basseches, P. J. 167, 180
Basu, A. 365, 374
Basu, S. K. 65, 70, 72, 74
Bauer, U. 210, 212, 215
Baugh, C. M. 18, 21
Baumert, T. 307–319
Bausert, W. R. E. 205, 214
Baxter, J. A. 210, 212, 215
Beacham, L. M. III. 125, 132, 136, 142
Beardsley, G. P. 13, 20
Beaven, M. A. 85, 90, 148, 153, 158, 164
Becher, H. J. 338, 339, 355
Beck, G. 307, 318
Beck, W. T. 85, 90
Becker, M. A. 147, 151, 158, 161, 164, 165, 169, 170, 174, 178–182
Beckett, M. 362, 371
Bedri, A. 283–306
Beg, Z. H. 65–66, 68, 71, 72, 74–76
Begley, C. G. 362, 371
Beinert, H. 277, 279
Belikova, Y. O. 271–280
Bell, G. D. 59, 63
Bell, J. C. 360, 368
Bell, R. L. 205, 215
Bell, R. M. 201, 204, 214
Bellantone, R. A. 85, 90
Bellomo, G. 241, 249
Bendich, A. 125, 142
Benner, S. A. 219–236
Bennett, L. L., Jr. 167, 180, 185, 198
Benovic, J. L. 72, 77
Benson, A. M. 241, 249
Berdel, W. E. 205, 214
Berenblum, I. 237, 248
Berezney, R. 25, 27, 30, 33, 34, 119, 123
Berg, P. 65, 70, 72, 74, 113–115, 118, 121
Berger, D. 254, 268
Berger, R. E. 125, 142
Bergmeyer, H. U. 306, 319
Bergström, J. D. 58, 63
Berlin, C. M. 71, 77
Berman, H. M. 167, 180, 185, 198
Berne, R. M. 182
Bernstrom, K. 309, 318
Berridge, M. J. 26, 33, 35, 49, 156, 165, 360, 367
Bertics, P. J. 361, 370
Bertino, J. R. 13, 20, 323–330
Besserer, J. A. 193, 199
Betsholtz, C. 360, 369
Betts, C. R. 338, 356
Beug, H. 360, 369
Beutler, H.-O. 315, 319
Bey, P. 81, 89
Bicker, U. 205, 215
Biesele, J. J. 125, 142
Bigner, D. D. 361, 370
Bigner, S. H. 361, 370
Biguet, N. F. 104, 109
Bilheimer, D. W. 57–59, 62-64
Billi, A. M. 25, 30, 31, 33
Birchenall-Sparks, M. C. 361, 369
Birren, B. W. 241, 249
Birtwell, J. 59, 63
Bishop, J. M. 360, 361, 368, 369
Bishop, W. R. 204, 214
Black, J. 364, 374
Black, J. D. 369, 373
Blackshear, P. J. 361, 370
Blair, O. C. 351, 352, 356
Blakeley, D. M. 156, 165
Blakley, R. L. 10, 125, 131, 142, 144
Blanchard, J. M. 361, 369
Bland, F. 104, 109
Blave, A. 132, 144
Blick, M. 361, 371
Bloch, A. 354, 356, 359–374
Bloom, F. E. 93, 107
Bluestein, H. G. 177, 182
Blumenthal, D. K. 104, 109
Blundell, T. L. 222, 236
Bltz, W. W. 323, 324, 333
Bogenmann, E. 362, 371
Böhme, H.-J. 284, 306
Bologese, J. A. 59, 63
Boni, C. 104, 109
Bonilla, M. A. 366, 374
Bonner, F. W. 313, 319
Boone, B. A. 324, 333
Boone, T. C. 366, 374
Boritzki, T. J. 185–199, 338, 355
Borner, C. 202, 215
Boschelli, D. 14–16, 20
Boss, G. R. 147, 164, 177, 178, 182
Bottero, L. 362, 373
Boucherie, H. 286, 306
Bourgeois, S. 85, 90

Bowdon, B. J. 125, 142
Boyer, P. D. 74, 279, 280
Bradford, M. 285, 306
Bradford, M. M. 151, 165
Bradshaw, R. A. 214
Bray, S. J. 114, 121
Breen, T. S. 168, 180, 188, 199
Bregman, H. S. 242, 260
Breitman, T. R. 362, 371
Brelvi, Z. S. 362, 373
Brewer, H. B., Jr. 65, 66, 68, 71, 74–76
Brewer, L. 113–123
Brindley, D. N. 36, 49
Brockman, R. W. 167, 180
Brodsky, I. 333
Bron, C. 262, 269
Brown, A. G. 53, 60
Brown, C. D. 57, 62
Brown, G. B. 125, 142
Brown, K. 58, 63
Brown, K. D. 32, 34, 156, 165
Brown, M. S. 56–59, 62–72, 74–76
Brown, P. R. 128, 143, 150, 165
Brown, R. R. 237, 239, 248
Brown, S. J. 13, 20
Broxmeyer, H. E. 363, 373
Büchsel, R. 253, 254, 266–269
Buchanan, J. M. 148, 149, 159, 162, 164
Bueding, E. 241, 250
Buesa-Perez, J. M. 176, 182
Bunni, M. 13–21
Buntinx, A. 59, 63
Burchall, J. J. 20
Burchenal, J. H. 125, 142
Burdon, R. H. 90
Burgess, G. M. 360, 367
Burns, C. P. 360, 367
Burns, N. J. III. 168, 180, 185, 198
Burov, V. I. 271–280
Burrone, O. R. 83, 89
Busbee, D. L. 25, 33
Buü-Hoi, 237, 248
Bywater, M. 361, 369

Caelles, C. 65, 75
Cafferata, E. G. A. 83, 89
Caldwell, A. 202, 215
Calvert, A. H. 13, 20
Cambor, C. 134, 144
Campbell, D. G. 101, 104, 109
Campisi, J. 361, 369–371
Canellakis, E. S. 85, 90
Cantero, A. 337, 355
Cantley, L. 204, 214
Capitani, S. 25–34
Caracciolo, D. 362, 372
Caras, I. W. 114–118, 122
Carling, D. 65, 66, 75
Carlson, J. 113, 121
Carman, M. D. 323, 324, 332
Caron, M. G. 72, 77
Carpenter, G. 161, 166
Carrera, C. J. 174, 181
Carson, D. A. 174, 181
Carter, G. L. 125, 126, 142
Carter, J. R. 36, 49
Casara, J. 81, 89
Cashmore, A. R. 323, 324, 331–333
Casnellie, J. E. 161, 166
Cass, C. E. 125, 142
Cassel, D. 360, 367
Castagna, M. 360, 368
Chabner, B. A. 15, 20, 323, 324, 331–333
Chabner, W. A. 201, 212, 214
Chahavala, S. W. 210, 212, 215
Chaix, J.-C. 262, 268
Challoner, P. B. 361, 370
Chambard, J. C. 361, 369
Chan, K. K. 15, 20
Chang, C. C. Y. 72, 77
Chang, C.-H. 115, 122
Chang, C.-M. 3–11
Chang, T. Y. 72, 77
Chao, Y. S. 59, 63
Charamella, L. J. 210, 212, 215
Chassy, B. M. 7, 10
Chaudhari, A. 276, 280
Chawala, S. B. 204, 214
Cheah, M. S. 360, 368
Chello, P. L. 323, 330, 332, 333
Chen, E. L. 86, 91
Chen, H. 201, 213
Chen, H. W. 72, 77
Chen, I. S. 125, 132, 136, 142
Chen, J. 54, 57, 58, 60–62
Chen, J. S. 54, 56, 61
Cheng, Y.-C. 14, 18, 20, 115, 122, 201, 214
Chesis, P. L. 241, 249
Chesne, S. 222, 236
Cheung, W. Y. 37, 50, 108

Chikenji, T. 147, 150, 164
Chin, D. J. 58, 62, 68, 70–72, 74–76
Chiu, I. M. 360, 368
Chothia, C. 222, 236
Chou, J. 17–19, 21, 325, 330, 333
Chou, T. C. 13–21, 202, 210, 215, 323–333
Chu, C. K. 53, 60
Chu, S. H. 134, 144
Chytill, F. 20
Clarke, C. F. 58, 62, 63, 65, 74
Claus, T. H. 283, 304
Cleveland, D. W. 254, 268
Clutterbuck, E. J. 362, 372
Cocco, L. 25–34
Cochran, B. H. 360, 361, 368, 369
Cocivera, M. 275, 279
Coffey, D. S. 28, 34
Coffino, P. 82, 86, 89, 91
Cohen, E. A. 114, 117, 121
Cohen, M. P. 89
Cohen, P. 37, 49, 50, 66, 76
Cohen, S. 161, 166
Colb, R. 57, 62
Cole, P. D. 53, 60
Colledge, W. H. 360, 368
Collett, M. S. 360, 369
Collins, M. 202, 204, 216
Collins, S. D. 162, 166
Collins, T. 115, 122
Colman, R. D. 15, 20
Common, H. H. 205, 214
Conners, T. A. 21
Conney, A. H. 237, 239, 248
Conssens, L. 360, 369
Conzelmann, A. 262, 269
Cook, P. D. 185–199
Coon, M. J. 109
Cooney, D. A. 338, 339, 356
Cooper, A. D. 65, 66, 72, 75
Cooper, B. A. 20
Cooper, J. R. 93, 107
Cooper, M. 360, 367
Corbin, J. D. 94, 108
Corey, E. J. 311, 319
Coronnello, M. 323, 324, 332
Corps, A. N. 32, 34
Cory, A. H. 121
Cory, J. G. 113–115, 117, 121, 122, 125–144, 249, 374
Cory, S. 361, 371
Costa, S. D. 202, 215
Could, R. G. 65, 66, 72, 75
Coulie, P. G. 283, 304
Coulon, J. M. 253, 267
Coussens, L. 201, 203, 360, 369
Coutts, M. 14, 20
Cowley, G. 361, 370
Cragoe, E. J. 55, 56, 61
Craig, R. W. 364, 366, 373, 374
Cramer, P. L. 9, 11
Crane, F. L. 272, 279
Craver, L. F. 125, 142
Crawford, I. P. 223, 236
Crepin, K. M. 283, 297, 303, 304
Crepin, M. 85, 90
Cronin, M. T. 361, 370
Crosier, P. S. 363, 373
Croze, E. M. 254, 268
Csermely, P. 161, 166
Cummings, R. D. 67, 76
Cunningham, B. A. 262, 268
Cunningham, L. 237, 248
Currie, S. 54, 57, 58, 60
Curtin, G. M. 25, 33
Curtis, S. 84, 90
Cutler, H. G. 53, 60

Dahlen, S.-E. 307, 309, 317, 319
Dana, S. L. 82, 89
Danenberg, P. D. 14, 18–20
Dani, C. 361, 369
Danzin, C. 81, 89
Darbre, P. 84, 90
Dargeon, H. W. 125, 142
Darnowski, J. W. 132, 144
Darville, M. I. 283, 297, 303, 304
Das, M. 365, 374
Das, N. B. 271, 272, 279
David, F. 115, 122
Davidson, F. F. 43, 44, 48, 50
Davies, D. R. 283, 303, 305
Davignon, J. P. 338, 339, 356
Davis, P. J. 65, 75
Davis, R. D. 338, 339, 356
Davison, M. T. 37, 49
Dawson, R. M. C. 27, 34
Dayton, E. T. 362, 372
De Angelis, L. M. 330, 333
De Clercq, E. 126, 143
De Long, M. J. 238–243, 245, 246, 249,

250
De Riso, C. 53, 60
De Schepper, P. J. 57, 62
De Vries, A. 170, 181
Dean, M. 361, 369, 371
Deana, A. A. 55, 56, 61
Decker, K. 266, 269
Declue, J. E. 360, 369
Dedman, J. R. 94, 108
Defer, N. 85, 90
DeLaat, S. W. 360, 367
Demaille, J. G. 37, 49
Demartino, G. N. 67, 76
Dennis, E. A. 43, 44, 48, 50
Denton, M. 177, 182
Denzlinger, C. 307–311, 314, 315, 317, 318
Dethlefs, U. 259, 268
Deuel, T. F. 147, 158, 164, 179, 182, 188, 199, 360, 367–369
Devare, S. G. 360, 368
Devartanian, D. V. 271, 279
Dexter, D. L. 125, 137, 142
Diamond, A. 362, 371
Diamond, I. 161, 166
Dicker, P. 148, 151, 153, 158, 165, 167
Dickson, C. 84, 90
Didier, N. 127, 182
Dimitrov, N. V. 210, 212, 215
Dion, R. L. 338, 356
Doerfler, W. 84, 90
Doig, M. T. 14, 20
Dolan, P. 241, 250
Domenech, C. 39, 50
Donelli, A. 361, 370
Donohue, J. P. 185, 198
Doolittle, R. F. 360, 368
Doppler, W. 201–204, 208, 210, 212, 213, 215
Doss, S. L. 53, 60
Downward, J. 360, 369
Drake, J. C. 15, 20
Dreyer, R. N. 323, 324, 332
Drummond, G. I. 172, 181
Dunn, A. R. 360, 369
Durkin, J. P. 123
Dustin, M. L. 268
Dutschman, G. E. 14, 18, 20

Easom, R. A. 65, 66, 75, 76
Edelman, A. M. 104, 109
Edelman, G. M. 262, 268
Edgar, D. H. 94, 108
Edmond, J. 58, 63
Edward, J. 58, 63
Edwards, P, A. 57, 58, 62, 63, 65, 67, 68, 72, 74, 76, 77
Egger, B. 205, 214
Ehrenberg, A. 113, 114, 121
Eibl, H. U. 205, 214
Eichberg, J. 27, 34
Ek, B. 360, 369
Ekfors, T. O. 253, 267
El Mestikawy, S. 104, 109
El-Maghrabi, M. R. 283, 296, 304
Elford, H. L. 131, 132, 144
Elion, G. B. 125, 132, 136, 139, 142, 188, 198
Ellington, A. D. 221, 223, 235
Elliot, R. D. 185, 198
Eloranta, A. T. 86, 91
Elslager, E. F. 331, 333,
Emptage, M. H. 277, 280
Endo, A. 53–64
Engstrom, Y. 114, 121
Ensminger, W. B. 20
Eppenberger, U. 202, 215
Eraso, P. 284, 286, 287, 301, 305
Erickson, S. K. 65, 66, 72, 75
Erikson, R. L. 360, 369
Eriksson, S. 114–117, 121, 122
Ernster, L. 109, 241, 249
Escher, G. C. 125, 142
Eschrich, K. 283, 305
Esselmann, H. 35–50
Estabrook, R. W. 109
Eto, Y. 362, 371
Evans, B. E. 55, 56, 61
Evans, J. P. M. 338, 339, 355
Evans, R. M. 361, 370
Evenson, K. J. 65, 66, 75

Fabbro, O. 202, 215
Fabry, M. 114, 117, 118, 122
Facchini, A. 30, 32, 34
Faderan, M. A. 337, 338, 342, 355
Falco, E. A. 125, 142
Fan, J. 3–11
Fanning, V. 362, 372
Fannucchi, M. P. 331, 333

Farber, S. 324, 333
Farina, F. A. 363, 373
Farnham, P. J. 125, 143
Farr, A. L. 27, 34, 95, 108
Farrar, W. L. 361, 369
Fatemi, S. H. 262, 269
Fauquet, M. 104, 109
Faust, J. R. 56, 57, 62, 65, 71, 74
Favrot, M. C. 360, 367
Feller, A. C. 265, 269
Ferguson, P. J. 201, 214
Ferioli, M. E. 85, 90
Ferrara, P. 101, 104, 109
Ferrari, S. 104, 109, 361, 370
Ferrer, A. 65, 75
Ferrer, M. M. 83, 89
Fest, W. 35–50
Feuer, G. 243, 250
Fibach, E. 84, 90
Fiebig, H. 201–216
Fikui, N. 115, 122
Filion, M. 114, 117, 121
Fine, R. L. 201, 212, 214
Finean, J. B. 254, 262, 268
Finer-Modre, J. 68–70, 72, 76
Fink, U. 205, 214
Fischer, E. H. 37, 49
Fischer, M. 35–50
Fischer, S. G. 254, 268
Fisher, C. 361, 370
Fisher, D. B. 93, 107
Fisher, M. H. 14, 18, 20
Fitzsimmons, B. 308, 309, 312, 318
Fladmoe, A. V. 243, 250
Flanagan, R. G. 362, 372
Flavell, R. A. 84, 90
Fleischer, A. E. 113–115, 117, 121, 122
Fleischman, L. F. 204, 214
Fletcher, M. 361, 370
Fletterick, R. J. 219, 235
Foa, P. P. 89
Fodor, P. 161, 166
Fogelman, A. M. 57, 58, 62, 63, 65, 67, 68, 72, 74, 76, 77
Foley, G. E. 324, 333
Follman, H. 113, 114, 121
Ford, R. J. 368
Forsch, R. A. 15, 20
Fortner, J. G. 248
Foster, A. 308, 309, 312, 318
Foster, K. 36, 49
Foulkes, J. G. 66, 76, 360, 368
Fox, I. H. 147, 151, 158, 164, 176, 178, 179, 182
Fox, R. M. 130, 143
Frackleton, A. R. 360, 368
Franchi, A. 361, 369
Francke, U. 201, 213
Franco, C. T. 326, 333
Francois, J. 283, 284, 286, 287, 289, 301–303, 305, 306
Frankfurt, O. S. 366, 374
Frappier, L. 113, 114, 117–119, 121
Fraschini, F. 85, 90
Fraser, A. L. 254, 268
Freedman, S. O. 363, 373
Freisheim, J. H. 7, 8, 10
Frenzel, J. 283, 305
Friedman, D. L. 31, 34
Friedman, E. 93, 100, 107
Friedman, H. S. 361, 370
Friedmann, T. 152, 165
Friend, S. H. 362, 371
Frizzera, G. 84, 90
Fry, D. W. 185–199
Fuchs, J. A. 113, 121
Fujihara, T. 238, 248
Fujii, S. 55, 56, 58, 61
Fujimura, S. 115, 122
Fujisawa, H. 93–110
Fujita, K. 253, 267
Fujitaki, J. M. 167–182
Fukasawa, K. 253, 267
Fukasawa, K. M. 253, 267
Fukunaga, R. 84, 90
Fukuzaki, H. 156, 166
Furuya, E. 283, 303, 305
Furuya, K. 54, 61
Fuyamada, H. 253, 267

Gabrilove, J. L. 366, 374
Gahmberg, C. G. 87,91
Galivan, J. 13–21
Gallick, G. E. 361, 371
Gallie, B. L. 362, 371
Gallo, R. C. 362, 371
Galton, S. A. 310, 319
Gamon, S. 361, 370
Gancedo, C. 283, 284, 286, 287, 301, 302, 305, 306
Gantner, G. 210, 212, 215

Gapski, G. R. 9, 11
Garber, B. B. 125, 142
Garfinkel, D. 162, 166
Garfinkel, L. 162, 166
Garrett, C. 128, 143
Garrity, M. J. 309, 319
Gaumont, Y. 14, 18, 20, 21
Gavrikova, E. V. 272, 274, 279
Gebeyehu, G. 338, 356
Geelen, M. J. H. 65, 75
Gelehrter, T. D. 156, 166
George, C. B. 128, 143
George, E. L. 114, 121
Gerace, L. 364, 374
Gerber, M. R. 362, 371
Gerok, W. 266, 269, 311, 319
Ghose, A. K. 171, 181
Gibson, D. M. 65–77
Gibson, G. G. 313, 319
Gibson, K. J. 147, 158, 164
Gilfillan, J. L. 55, 56, 61
Gill, G. 65, 70-72, 74, 75
Gill, G. N. 361, 370
Gillies, R. J. 177, 182
Gillio, A. P. 366, 374
Gillis, J. 172, 181
Gilman, A. G. 360, 369
Gilmore, T. 360, 369
Gilmour, R. S. 25, 26, 28, 31, 33
Giner-Sorolla, A. 125, 142
Ginsbourg, M. 362, 371
Girard, P. R. 25, 30, 33
Givol, D. 360, 368
Glaser, L. 360, 367
Glazer, R. I. 338, 356
Glenn, J. L. 272, 279
Glenner, G. G. 253, 267
Glenney, J. R., Jr. 43, 44, 48, 50
Glomset, J. A. 360, 367
Glover, J. L. 185, 198
Glowinski, J. 104, 109
Glusker, J. P. 277, 280
Go, M. 94, 108
Godard, C. M. 362, 371
Godfrey, P. P. 360, 367
Goegelman, R. T. 53, 60
Gold, P. 363, 373
Goldberg, D. M. 236
Goldfarb, A. 84, 90
Goldman, I. D. 20
Goldstein, A. L. 361, 370
Goldstein, J. L. 56, 58, 59, 62–72, 74–76
Goldstein, M. 93, 100, 101, 107, 108
Goldstein, S. 84, 90
Gomez, M.-E. 284, 302, 305
Gonda, T. J. 360, 369
Gonzalez, F. 240, 249, 313, 314, 319
Gordon, J. 123
Goridis, C. 262, 268
Goss, S. J. 170, 181
Gossrau, R. 253–269
Goto, Y. 59, 63
Gotoh, Y. 319
Gots, J. S. 125, 142
Gough, N. M. 360, 369
Gould, N. P. 55, 56, 61
Gozlan, H. 104, 109
Graf, T. 215, 360, 369
Graslund, A. 114, 121
Gray, A. 360, 369
Gray, E. 360, 369
Green, D. E. 272, 279
Green, I. 362, 372
Greene, L. A. 93, 94, 101, 108
Greengard, P. 93, 101, 108
Grey, H. E. 361, 371
Grima, B. 104, 109
Grindey, G. B. 13, 19, 20
Grinstein, S. 204, 214
Grisolia, S. 279
Grivennikova, V. G. 272, 279
Groner, B. 201–204, 213, 214
Gros, F. 101, 104, 109
Gross, R. B. 210, 212, 215
Gross, W. 306
Groudine, M. 361, 370
Grubbs, R. D. 161, 162, 166
Grundy, S. M. 57, 59, 62, 64
Grunicke, H. 201–216
Grzeschik, K. H. 83, 89
Guan, X.-P. 364, 374
Guenette, A. 48, 50
Guhlmann, A. 307, 319
Gullberg, U. 362, 371
Gullo, V. P. 53, 60
Günther, T. 159, 161, 166
Guo, C. 360, 368
Gupta, M. 82, 89
Gustafsson, B. 308, 309, 318
Gusterson, B. 361, 370
Gutman, M. 271, 279
Guttenplan, J. B. 210, 212, 215

Gutterman, J. U. 361, 371
Guttormsen, A.-B. 360, 368

Haas, R. 262, 269
Haba, T. 59, 64
Habenicht, A. J. R. 360, 367
Hagemenas, F. C. 57, 62
Hagmann, W. 307–311, 315, 317–319
Hait, W. N. 201, 212, 214
Hales, P. 36, 49
Hall, E. M. 237, 248
Hall, T. C. 363, 373
Hamano, K. 54, 61
Hamilton, S. R. 361, 370
Hammarström, S. 307–309, 311, 312, 315, 317, 318
Hammer, D. K. 307, 309, 311, 314, 315, 317, 318
Hamon, M. 104, 109
Hand, K. M. 59, 63
Handschumacher, R. E. 132, 144
Hankinson, O. 241, 249
Hannon, Y. A. 205, 215
Hanski, C. 253–269
Hansson, G. 309, 319
Hansson, H.-A. 114, 121
Harada, M. 253, 267
Hardeman, E. C. 56, 62, 65, 74
Hardie, D. G. 65, 66, 75, 101, 104, 109
Hardgrave, J. E. 65, 66, 68, 72, 75
Hardwick, J. P. 313, 314, 319
Harel, L. 153, 165
Hargrove, M. E. 362, 371
Haring, H.-U. 161, 166
Harlow, K.W. 147, 158, 164
Haro, D. 65, 66, 71, 72, 75
Harper, T. W. 309, 319
Harrap, K. R. 13, 20, 21
Harrer, H. 210, 212, 215
Harris, C. C. 362, 372
Harris, E. 54, 57, 58, 60
Harris, J. E. 93, 100, 107
Harrison, P. R. 26, 33
Hartel, S. 253–269
Hartwick, R. A. 128, 143, 150, 165
Hartzell, P. 241, 249
Hasenkamp, R. 53, 60
Hashimoto, T. 362, 372
Hasumi, K. 53–64
Hata, Y. 59, 63
Hatefi, Y. 271, 279
Hatfield. K. 125, 142
Hausamen, T.-U. 306
Havel, C. M. 58, 63
Hawkins, J. M. 313, 319
Hayaishi, O. 107
Haycock, J. W. 93, 101, 108
Hayflick, J. S. 360, 369
Hayman, M. 360, 369
Hazama-Shimada, Y. 56, 62
He, H.-T. 262, 268
Heby, O. 81, 89
Hecker, S. 179, 182
Hederstedt, L. 271, 279
Hedqvist, P. 309, 319
Heel, R. C. 59, 64
Heerema, N. 335, 336, 341, 348, 351, 354, 355
Hegardt, F. G. 65, 66, 71, 72, 75
Heinrich, P. C. 185, 198, 268
Heldin, C.-H. 360, 361, 368, 369
Helfman, D. M. 205, 206, 214
Helgar, R. 306
Helgeson, J. A. S. 56, 62
Helmer-Matyjek, E. 93, 101, 108
Hemmings, B. A. 37, 50
Hemperly, J. J. 262, 268
Henderson, G. B. 3, 5–7, 9–11
Henderson, J. F. 151, 152, 165, 176, 177, 182
Hendrickson, S. L. 360, 368
Henry, J. 106, 110
Hensens, O. D. 54, 57, 58, 60, 61
Heppel, L.A. 149, 165
Herdewijn, P. 126, 143
Herlyn, D. 365, 374
Herlyn, M. 84, 90, 361, 365, 370, 374
Herrmann, D. B. J. 205, 215
Hers, H.-G. 283-285, 287, 289, 297, 301–306
Hershfield, M. S. 175, 176, 181
Herwood, H. M. 59, 64
Hesketh, T. R. 159, 166
Heslop, J. P. 156, 165
Hess, B. 284, 294, 295, 302, 303, 305
Heussner, R. 253, 254, 267
Hewick, M. 201, 214
Heymann, E. 253, 267
Hickman, J. A. 210, 212, 215
Hikasa, Y. 127, 143
Hill, W. T. 237, 248

Hino, M. 253, 267
Hirai, M. 361, 370
Hirano, M. 253, 267
Hirano, T. 362, 371
Hirata, F. 44, 50
Hirata, Y. 104, 109
Hiroaka, B. Y. 253, 267
Hirsch, F. 210, 212, 215
Hirschhorn, R. 132, 144
Hirshfield, J. 54–58, 60, 61
Hirvonen, A. 81–91
Hisata, T. 148, 150, 162, 165
Hitchings, G. H. 125, 132, 139, 142
Hitzenberger, G. 59, 63
Hixson, D. C. 261, 263, 268
Ho, Y. K. 58, 62, 68, 76
Hochstein, P. 241, 249
Hochster, R. M. 142
Hoffbrand, V. H. 338, 339, 355
Hoffman, C. H. 54, 57, 58, 60, 61
Hoffman, R. 335–356
Hoffman, W. F. 54–56, 61
Hoffmann, C. 254, 255, 257, 260, 263, 267, 268
Hoflacher, J. 201–204, 213
Hofmann, E. 283–306
Hofmann, J. 201–216
Holladay, L. A. 94, 108
Hollan, S. R. 338, 341, 345, 351–353, 355
Holmes, E.W. 147, 161, 164, 170, 181
Holmes, I.B. 59, 63
Holmsen, H. 360, 368
Hölttä, E. 81, 82, 86, 89, 91
Holtz, W. J. 55, 56, 61
Holzer, H. 284, 305, 306
Honma, C. 364, 366, 374
Honma, Y. 364, 366, 373, 374
Hood, L. E. 360, 368
Hoogsteen, K. 54, 57, 58, 60
Hook, K. E. 185–199
Hooper, N. M. 262, 263, 268, 269
Hoover, R. 361, 370
Hopsu-Havu, V. K. 253, 267
Horanyi, M. 338, 341, 345, 351–353, 355
Hori, M. 151, 165
Horowitz, J. M. 362, 371
Hortobagyi, G. N. 361, 371
Horvath, C. 331, 333
Hosaka, K. 36, 49
Houghton, R. A. 116, 123
Howard, F. B. 143
Hoxie, J. 362, 372
Hozumi, M. 362, 364, 371, 374
Huang, J. K. 361, 370
Huang, J. S. 360, 368, 369
Huang, L. 53, 60
Huang, M. C. 125, 131, 142, 144
Huang, S. S. 360, 368
Hubbard, W. C. 309, 319
Huber, M. 307–319
Huberman, E. 313, 314, 319
Hudson, J. L. 130, 143
Hue, L. 283, 297, 303–305
Huennekens, F. M. 3–11
Huff, J. W. 55, 56, 59, 61, 63
Huff, M. W. 59, 63
Huggins, C. B. 238, 248
Huhle, T. 253–269
Huisman, W. H. 174, 181
Humphrey, P. A. 361, 370
Hunkapiller, M. W. 360, 368
Hunkeler, 241, 249
Hunt, T. 114, 121
Hunt, V. 54, 57, 58, 60
Hunter, T. 360, 369
Hunts, J. 361, 370
Hurley, J. R. 360, 369
Hyakawa, T. 253, 267

Ibrahim, S. A. 210, 212, 215
Ichikawa, S. 106, 110
Igarishi, H. 360, 368
Ihlenfeldt, M. 210, 212, 215
Iizasa, T. 148, 164, 170, 174, 181
Ikegami, T. 338, 340, 341, 345, 351-353, 355
Illingworth, D. R. 57, 62
Immonen, T. 85, 90
Inagami, T. 103, 109
Ingebritsen, T. S. 65–67, 75, 76
Insel, J. 132, 144
Ioannides, C. 240, 249
Irlin, I. S. 363, 373
Irvine, R. F. 25–28, 33, 34, 156, 165, 360, 367, 368
Ishijima, S. 147–166, 170, 181
Ishikura, H. 364, 373, 374
Ishimura, Y. 109
Ishizuka, T. 147–166
Israel, D. 241, 249

Ito, T. 59, 63
Ito, Y. 238, 248
Iwai, H. 311, 315, 319
Iwamoto, S. 363, 373
Iwashita, T. 54, 61

Jackman, A. L. 13, 20
Jackson Roberts, L. II 309, 315, 319
Jackson, R. C. 13, 19, 185–199, 338, 355
Jackson, R. L. 94, 108
Jacobs, S. 365, 374
Jacobsen, N. 363, 373
Jafferji, S. S. 360, 367
Jaggi, R. 201–204, 213, 214
Jakob, A. 202, 208, 215
Jakoby, W. B. 318
James, I. 59, 63
Jänne, J. 81–91
Jänne, O. A. 82–85, 87, 89, 90, 91
Janol, R. C. 362, 372
Jansen, P. L. M. 309, 311, 318
Jaramillo, J. J. 58, 59, 63
Jasmin, C. 362, 371
Javoy-Agid, F. 104, 109
Jayaram, H. N. 335–356
Jeanteur, P. 361, 369
Jefferson, L. S. 66, 76
Jellinger, K. 104, 109
Jenke, H. 65, 74
Jensen, B. H. 147, 158, 164
Jenthoft, N. 262, 269
Jernström, B. 241, 249
Jewell, S. A. 241, 249
Jimenez, J. J. 363, 373
Joe, C. O. 25, 33
Johnnson, K. 219, 235
Johns, D. G. 330, 333, 338, 339, 356
Johnson, G. R. 362, 371
Johnson, J. D. 94, 108
Johnson, K. 362, 372
Johnson, T. B. 13–21
Johnsson, A. 360, 368
Jolicoeur, M. 48, 50
Jolivet, J. 15, 20
Jones, K. H. 59, 63
Jones, L. M. 360, 367
Jones, T. 115, 116, 122
Jones, T. R. 13, 20
Jones, W. E. 313, 319
Jorn, D. 53, 60
Joseph, S. K. 360, 368
Josephs, S. F. 360, 368
Joshii, Y. 253, 267
Joshua, H. 54, 57, 58, 60, 61
Julien, J. 104, 109
Jung, M. J. 81–89
Jungermann, K. 311, 315, 319
Junis, J. J. 84, 90

Kabara, J. J. 33
Kabelitz, D. 362, 373
Kahana, C. 82, 89
Kahn, C. R. 161, 166
Kahn, P. 215
Kahn, S. B. 333
Kaibuchi, K. 156, 165, 166, 201, 204, 213, 360, 368
Kaijser, L. 309, 311, 318
Kajander, O. 174, 181
Kajikawa, N. 71, 77
Kakuma, S. 253, 267
Kalghatgi, K. K. 331, 333
Kallio, A. 81, 82, 86, 87, 89, 91
Kalman, T. I. 14, 20
Kanatani, M. 253, 267
Kanazirska, M. P. 210, 212, 215
Kane, J. 57, 62, 68, 76
Kaneko, I. 55–58, 61, 62
Kanisawa, M. 247, 250
Kapyaho, K. 81, 89
Karnofsky, D. A. 125, 142
Kashiwagi, T. 253, 267
Kashiwamura, S. 362, 371
Kästner, S. 311, 319
Kasuga, M. 161, 166
Katsufuji, M. 148, 162, 165
Katz, N. 266, 269
Katzir, Y. 84, 90
Kaufman, S. 93, 107
Kawahara, Y. 156, 165
Kawatani, N. 363, 373
Kearney, E. B. 271, 279
Kefford, R. F. 130, 143
Keith, M. L. 68, 76
Kellen, J. A. 243, 250
Kelley, J. A. 338, 356
Kelley, W. N. 147, 158, 164, 170, 176, 178, 179, 181, 182
Kelly, K. 361, 369
Ken, R. 31, 34

Kennedy, E. P. 36, 49
Kennedy, M. C. 277, 280
Kennelly, P. J. 65, 68, 74, 76
Kenney, F. T. 85, 90
Kenny, A. J. 253, 262, 267
Kent, C. 65, 71, 75
Keppler, A. 307–309, 312, 315, 318
Keppler, D. 268, 307–319
Kern, D. H. 127, 143
Kerwar, S. S. 14–16, 20
Kesevan, V. 15, 20
Keski-Oja, J. 363, 373
Kessler, J. F. 341, 345, 356
Kessler, R. 283–306
Ketterer, B. 318
Keyomarsi, K. 127, 143
Khanna, N. C. 37, 50
Khatsernova, B. Y. 114, 118, 119, 122
Khoo, M. K. Y. 151, 165, 176, 177, 182
Khramkova, N. I. 363, 373
Kieber-Emmons, T. 364, 374
Kiefer, G. 210, 212, 215
Kikkawa, U. 94, 108, 201, 204, 213, 360, 368
Kikuchi, A. 156, 165
Kikuchi, T. 70, 77
Kim, M. 167, 180
Kimura, S. 240, 249
Kindy, M. S. 361, 369
King, C. J. 147, 158, 164
King, L., Jr. 161, 166
King, R. J. B. 84, 90
King, T. E. 272, 279
King, T. J. 53, 60
King, W. C. 360, 367
Kingsley-Pillers, E. M. 125, 142
Kini, G. D. 167, 171, 172, 180
Kinkade, J. H. 205, 206, 214
Kinoshita, N. 148–150, 153, 154, 157, 165
Kinzler, K. W. 361, 370
Kim, A. 307, 317
Kirschner, K. 223, 236
Kirschner, M. W. 254, 268
Kirsi, J. J. 168, 180, 185, 198
Kishimoto, A. 71, 77
Kishimoto, T. 362, 371
Kisliuk, R. L. 14, 18, 20, 21
Kita, K. 147–166, 170, 181
Kita, T. 58, 63
Kitano, N. 58, 63
Kitano, T. 94, 108
Kitchener, G. 360, 369
Kjälquist, A. 95, 108
Klaus, G. G. 362, 372
Kleineke, J. 35, 38, 40, 45–47, 49
Klinge, E. H. 114, 118, 120, 122
Klohs, W. D. 193, 199
Kneebone, P. 335, 336, 341, 348, 351, 354, 355
Knight, R. D. 351, 352, 356
Knopf, J. L. 201, 213
Knoppel, E. M. 57, 62
Knorr, A. M. 104, 109
Knudson, A. G. 362, 371
Kobayashi, M. 362, 372
Koizumi, J. 59, 64
Kojima, J. 253, 267
Kokesh, F. C. 275, 279
Komagata, D. 54, 60, 61
Konno, K. 362, 363, 372, 373
Kontula, K. K. 82, 87, 89
Kopperschläger, G. 284, 306
Koprowski, H. 84, 90, 361, 365, 370, 374
Kornberg, A. 125, 142, 151, 165
Koropatnick, S. E. 115, 118, 123
Kosicki, G. W. 276, 280
Koszalka, G. W. 125, 132, 136, 142
Kote, Z. 338, 341, 345, 351–353, 355
Kotlyar, A. B. 271–280
Kountz, P. D. 283, 296, 304
Kovacs, K. 243, 250
Kovanen, P. T. 58, 59, 63
Krebs, E. G. 74, 104, 109, 161, 166
Kreisel, W. 253–255, 266–269
Kreishman, G. P. 167, 180, 185, 198
Kremmer, T. 338, 341, 345, 351–353, 355
Krenitsky, T. A. 125, 132, 136, 139, 142, 188, 198
Kretschmer, M. 283–306
Kreutter, T. 202, 215
Krillis, S. 311, 319
Kriz, R. W. 201, 213
Kroon, P. A. 59, 63
Kubo, I. 167, 180
Kubota, M. 174, 181
Kuczenski, R. T. 93, 103, 106, 107, 109, 110
Kuehl, M. 131, 143
Kuenzel, E. A. 161, 166
Kufe, D. 362, 373
Kuhn, L. J. 360, 368

Kuhns, V. 134, 144
Kukovetz, W. R. 59, 63
Kull, F. C. Jr., 365, 374
Kumar, D. 14, 20
Kun, E. 279
Kung, H. F. 37, 50
Kunishima, M. 54, 61
Kuo, D. J. 278, 280
Kuo, J. F. 25, 30, 33, 205, 206, 213, 214
Kurland, J. 363, 373
Kuroda, K. 247, 250
Kuroda, M. 53, 55–63
Kuron, G. 54, 57, 58, 60
Kuwano, H. 54, 61

Lacassagne, A. 237, 248
Laemmli, U. K. 202, 216, 254, 268
Laine, R. 82, 83, 85, 89, 90
Laloux, M. 284, 305
Lam, L. K. T. 243, 250
Lam, Y. K. T. 53, 60
Lamb, R. G. 36, 49
Lammers, M. 113, 114, 121
Lamouroux, A. 104, 109
Lan, S. F. 57, 58, 62, 63, 65, 67, 68, 74
Landmann, L. 268
Lang, R. A. 360, 369
Langeland, N. 360, 368
Langelier, Y. 114, 117, 121
Lapis, E. 335–356
Larondelle, Y. 283, 304
Larrick, J. W. 362, 372
Larson, S. B. 167, 168, 171, 172, 180
Larsson, A. 115, 122
Lau, E. Y. 125, 142
Lau, L. F. 360, 368
Laux, M. 284, 305, 306
Laveck, M. A. 362, 372
Lazarus, H. 323, 324, 333
Le Frowitz, R. J. 72, 77
Leal, F. 360, 368, 369
Lechner, J. F. 362, 372
Ledenev, A. N. 272, 274, 279
Leder, P. 361, 369
Lederer, B. 306
Lee, J. 360, 369
Lee, M. H. 201, 213
Lee, T. J. 55, 56, 61
Legg, A. 156, 161, 166
Leionen, P. 82–85, 89–91
Lemongello, D. 57, 62, 67, 76
Lennert, K. 265, 269
Lenoir, G. 360, 367
Leof, E. B. 360, 368
Leonard, D. A. 72, 77
Leopold, W. R. 185–199
Lesk, A. M. 222, 236
Lester, H. A. 72, 77
Letcher, A. J. 25, 26, 28, 33
Letts, L. G. 308, 309, 312, 318
Levin, D. E. 231, 249
Levin, D. H. 125, 149
Levine, R. A. 361, 369
Levinson, A. D. 360, 369
Levinson, B. B. 114, 117, 118, 122
Levintow, L. 360, 369
Levitt, M. 93, 107, 331, 333
Lewis, R. A. 307, 311, 317, 319
Lewis, W. H. 83, 84, 89, 115, 118, 123
Leyva, A. 176, 182
Li, A. C. 72, 77
Li, F. P. 362, 371
Lien, E. J. 127, 132, 143
Lieberman, I. 132, 144, 151, 1645
Liepnieks, J. J. 337, 338, 342, 355
Liesch, J. 54, 57, 58, 60
Limanek, J. S. 72, 77
Lin, A. L. 131, 132, 144
Lin, C. 361, 370
Lin, J. T. 323, 324, 331–333
Lind, C. 241, 249
Lindgren, J. A. 307, 309, 317, 319
Lindner, H. 210, 232, 215
Lindsay, S. 57, 62
Lippman, S. M. 341, 345, 356
Lipsanen, V. 85, 91
Liscum, L. 58, 62, 67, 65–70, 72, 74, 76
Litosch, I. 37, 50
Livermann, T. A. 360, 369
Loehr, G. W. 205, 214, 338, 339, 355
Logel, J. 58, 63
Loh, N. N. 362, 371
Lojda, Z. 265, 269
Loo, T. L. 167, 180, 185, 198
Loomis, C. R. 201, 204, 213, 214
Lopez, M. B. 54, 57, 58, 60, 61
Losman, M. J. 179, 182
Lotem, J. 362, 366, 372, 374
Loudon, R. 362, 372
Low, M. G. 254, 262, 268
Lowry, O. H. 27, 34, 95, 108, 254, 268

Lucas, D. L. 351, 352, 356
Lui, M. S. 188, 198, 337, 338, 342, 355
Luskey, K. L. 58, 62, 65, 68–70, 72, 76, 77
Ly, A. 210, 212, 215

Mabuchi, H. 59, 64
MacManus, J. P. 115–118, 122, 123
MacDonald, J. C. 237, 239, 248
Machado-DeDomenech, E. 35, 38, 39, 45–47, 49, 50
Macnair, R. C. D. 253, 262, 267
MacNamara, J. 57, 62
Machoczek, K. 35–50
Maeda, S. 238, 248
Maguire, M. E. 161, 162, 166
Mahadevan, L. C. 360, 368
Maizel, A. L. 360, 368
Makela, T. P. 83, 89
Malatesta, V. 275, 279
Malgaroli, A. 159, 166
Mallet, J. 104, 109
Malspeis, L. 338, 339, 356
Maly, K. 201–216
Mancuso, R. W. 167, 178, 180, 185
Mandell, A. J. 93, 107
Mandelli, F. 362, 373
Mangini, L. 323, 324, 333
Manne, V. 37, 50
Mansell, M. M. 115, 122, 128, 143
Manzoli, F. A. 25–34
Maraldi, N. M. 25–34
Marchand, M. J. 283, 297, 303, 304
Marinucci, M. 362, 373
Maritaz, O. 360, 367
Marquez, V. E. 338, 356
Marrero, P. F. 65, 66, 71, 72, 75
Marsoni, S. 338, 339, 356
Martelli, A. M. 25–34
Martin, A. 36, 49
Martin, D. W. 114–118, 121, 122
Martin, G. F. 360, 369
Marton, L. J. 89
Masaki, A. 363, 373
Massot, N. 65, 75
Masuda, M. 54–56, 58, 61
Masui, H. 361, 370
Matsui, T. 362, 372
Matsumoto, M. 362, 371
Matsumoto, S. S. 168, 172, 177, 180, 182
Matsuyama, M. 84, 90
Mattalino, R. J. 268
Matteucci, A. 25, 30, 31, 33
Mauck, J. 255, 263, 268
Mavilio, F. 362, 372, 373
Mayer, D. 310, 315, 319
Mayes, E. L. V. 360, 369
Mayr, M. 271, 279
Mazon, M. J. 283, 305
Mazzei, G. J. 25, 30, 33
Mazzei, T. 323, 324, 332
Mazzotti, G. 25, 28, 31, 33
McBrien, D. C. H. 250
McCaffrey, P. 361, 370
McCartney, M. 125, 142
McCarty, R. E. 324, 333
McClarty, G. A. 115, 118, 122
McConlogue, L. 82, 89
McCord, J. M. 170, 181
McCormack, J. J. 331, 333
McCormick, D. B. 20
McCoy, E. C. 125, 142
McCullough, B. A. 323, 324, 332
McCullough, J. L. 323, 330, 332
McCullough, J. R. 331, 333
McDonald, J. A. 170, 181
McDonald, J. K. 255, 268
McEntire, K. D. 261, 263, 268
McGrane, H. 283, 304
McGuffin, M. 36, 49
McGuire, J. J. 15, 20, 323, 324, 332, 333
McIlhinney, J. 361, 370
McKay, I. 202, 204, 216
McKenna, J. 84, 90
McKernan, P. A. 168, 180, 185, 198
McKinney, J. S. 360, 367
McLeod, C. L. 361, 370
McQueen, C. A. 330, 333
Means, A. R. 94, 108
Medina, W. D. 323, 324, 332
Medrand, E. E. 83, 89
Meister, A. 181
Meldolesi, J. 159, 166
Mendelsohn, J. 361, 370
Mendelsohn, N. 363, 373
Mentlein, R. 253, 267
Mermod, J.-J. 85, 90
Mertens, E. 283, 304
Mesbak, M. K. 53, 60
Messing, J. 113, 121
Metcalf, B. W. 81, 89

Metcalf, D. 360, 362, 365, 366, 369, 371, 374
Metcalf, J. C. 159, 166
Meyer, L. J. 147, 164
Meyer, R. B. 167, 171, 172, 180
Meyskens, F. L. Jr., 341, 345, 356
Michel, N. 132, 144
Michell, R. H. 360, 367
Midvedt, T. 308, 309, 312, 318
Miki, Y. 36, 49
Mildvan, A. S. 272, 279
Miles, H. T. 143
Miller, A. G. 241, 249
Miller, A. O. A. 132, 144
Miller, E. C. 237–239, 248
Miller, J. A. 237–239, 248
Miller, S. J. 65–77
Miller-Faures, A. 132, 144
Minakami, S. 319
Minakuchi, R. 201, 214
Mines, L. S. 8, 11
Mini, E. 323, 324, 326, 332, 333
Minowada, J. 363, 373
Minskoff, S. A. 3–11
Minton, M. P. 323, 324, 332
Misono, K. 103, 109
Mitchell, B. S. 130, 143
Mitchell, C. D. 360, 367
Mitchell, R. L. 362, 372
Mitropoulos, K. A. 65, 75
Mitschelen, J. J. 65, 75
Miyamoto, S. 59, 64
Mizukawa, Y. 54, 61
Mochizuki, M. 59, 63
Modest, E. J. 323, 324, 333
Modollel, M. 205, 214
Moffler, M. H. 68, 76
Molthoff, C. 365, 374
Monagham, R. L. 53, 60
Monaghan, S. 54, 57, 58, 60
Monnier, N. 222, 236
Montgomery, J. A. 20, 125, 126, 137, 142, 167, 180, 185, 198
Moolenaar, W. H. 204, 214, 360, 367
Moore, A. S. 363, 373
Moore, E. C. 132, 144
Moore, J. P. 159, 166
Moore, M. A. 362, 366, 372, 374
Moran, R, G. 13, 15, 20, 127, 143
Morganroth, V. H. III 93, 100, 107
Mori, T. 201, 214
Morin, M. J. 202, 215
Morise, U. 363, 373
Morita, T. 115, 122
Moriyama, Y. 115, 122
Moroson, B. A. 323, 324, 326, 331–333
Morray, B. K. 168, 180, 185, 198
Morre, D. J. 254, 268
Morris, D. R. 89
Morris, H. P. 185, 198, 338, 355, 363, 373
Morris, J. D. H. 159, 166
Morrison, H. 241, 249
Morton, D. L. 127, 143
Moses, H. L. 363, 373
Mosmann, T. 324, 333
Moss, D. W. 236
Moss, R. J. 167, 171, 172, 180
Moyer, J. H. 333
Muellener, D. 202, 203, 214
Mueller, G. C. 237, 239, 248
Müller, T. H. 93, 101, 108
Munder, P. G. 205, 214
Murachi, T. 70, 77
Murakawa, S. 54, 61
Murayama, J. 115, 122
Murayama, K. 338, 355
Murphree, S. A. 132, 144
Murphy, M. 362, 372
Murphy, R. C. 308, 309, 312, 314, 318
Murthy, U. 365, 374
Myers, W. P. L. 125, 142

Nagai, Y. 37, 50
Nagata, K. 84, 90
Nagata, S. 84, 90
Nagatsu, I. 253, 267
Nagatsu, T. 93, 104, 106, 107, 109, 110, 253, 267
Nagelschmidt, M. 254, 268
Naharro, G. 360, 368
Nair, M. G. 13–21
Nairn, A. C. 93, 101, 108
Nakagawa, K. 54, 61
Nakagawa, Y. 253, 267
Nakajima, K. 362, 371
Nakamura, N. 253, 267
Nakamura, T. 54, 61
Nakanishi, M. 65, 74
Nakano, N. 362, 371
Nakata, H. 93, 94, 100, 104, 108, 109

Nakaya, N. 59, 63
Nanavati, N. T. 14, 18, 20
Naoki, H. 54, 61, 167, 180
Narayanan, R. 323, 324, 333
Narayanan, V. L. 338, 356
Nardini, M. 95, 108
Narita, H. 65, 71, 75
Nathans, D. 82, 89, 360, 368
Nathanson, L. 363, 373
Natsumeda, Y. 185, 198, 335–356
Nebert, D. W. 240, 241, 249
Nebuloni, R. 85, 90
Neef, V. 9, 11
Negishi, M. 241, 249
Negishi, S. 54, 60
Neiman, P. E. 361, 370
Nemenoff, R. A. 361, 370
Neri, L. M. 25, 30, 31, 33
Nerl, C. 362, 373
Ness, G. C. 67, 68, 76
Neumann, H. A. 205, 215
Neumeier, R. 254, 255, 257, 260, 262, 263
Nichols, C. R. 335, 336, 339, 341, 348, 350, 351, 354–356
Nicola, N. A. 362, 365, 366, 371, 374
Niedel, J. E. 204, 214, 360, 368
Niermann, T. 223, 236
Nilsson, E. 362, 371
Nimec, Z. 14–16, 20
Nishizuka, Y. 71, 77, 94, 108, 201, 204, 213, 214, 360, 367, 368
Nissinen, E. 155, 165
Nissler, K. 283, 284, 294, 305
Nist, C. 360, 367
Noda, M. 363, 373
Noguchi, H. 114, 118, 120, 122
Noland, B. J. 65, 66, 68, 72, 75
Nord, L. D. 167–182, 188, 198
Nordenskjöld, M. 241, 249
Nordstrom, J. L. 65, 75
Norin, E. 308, 309, 318
Norman, J. O. 25, 33
North, J. A. 168, 180, 185, 198
North, S. M. 361, 371
Novello, F. C. 55, 56, 61
Nowell, P. 361, 370
Nowell, P. C. 84, 90
Nozaki, M. 109
Numa, S. 36, 49
Nutter, L. M. 115, 122
Nyfeler, F. 283, 304
Nyham, W. L. 178, 179, 182

O'Brien, P. 323, 330, 332
O'Dea, R. F. 132, 144
O'Dwyer, J. P. 338, 339, 356
O'Garra, A. 362, 372
O'Reilly, R. J. 366, 374
Oates, J. A. 309, 319
Oberhuber, H. 210–216
Octave, J. N. 283, 297, 303, 304
Öfverstedt, L.-C. 277, 280
Ognibene, A. 25, 26, 28, 33
Ohara, J. 362, 372
Oikawa, T. 59, 63
Okamura, H. 84, 90
Okayama, H. 65, 70, 72, 74
Okazaki, T. 54, 61
Oken, M. M. 84, 89
Okita, R. T. 309, 315, 319
Okuno, S. 93–110
Okuyama, B. 253, 267
Olah, E. 335–356
Olsson, I. L. 362, 371
Onozaki, K. 362, 372
Oosterhof, A. 169, 179, 181
Oppenheim, A. 84, 90
Opperdoes, F. R. 303, 306
Oppermann, H. 360, 369
Orci, L. 65, 71, 74
Örning, L. 307–309, 311, 312, 315, 318
Oronsky, A. L. 14–16, 20
Orrenius, S. 241, 249
Ostrove, S. 54, 61
Otto, A. 283, 284, 294, 305
Oya, H. 253, 267
Ozanne, B. 361, 370
Ozawa, S. 361, 370

Page, M. 84, 90
Pahlke, U. 205, 215
Paiement, J. 48, 50
Palayoor, S. T. 201, 212, 214
Pandiella, A. 159, 166
Panko, W. B. 85, 90
Pantazis, P. 362, 373
Papa, S. 25, 30, 31, 33
Papaioannou, R. 188, 198
Pappu, A. S. 57, 62

Pardee, A. B. 114, 118, 120, 122, 271, 272, 279, 361, 371
Pardoll, D. M. 28, 34
Park, C.-S. 266, 269
Parke, D. V. 240, 249
Parker, B. J. 201, 213
Parker, R. A. 65–77
Parker, T. S. 57, 62
Parks, R. E., Jr. 125, 135, 137, 142, 144
Parmiter, A. 84, 90
Parwaresch, M. R. 265, 269
Pastan, I. 360, 361, 369, 370
Pataki, J. 238, 248
Patchett, A. A. 54, 57, 58, 60, 61
Patel, J. 201, 212, 214
Patterson, A. R. P. 125, 142, 152, 165, 176, 182
Paul, J. 26, 33
Paul, W. E. 362, 372
Paulik, E. 338, 341, 345, 351–353, 355
Paull, K. D. 338, 356
Paulsson, Y. 361, 369
Pauwels, R. 126, 143
Pelmont, J. 222, 236
Penman, M. 169, 181
Penman, S. 169, 181
Pennington, K. 335, 336, 341, 350, 351, 354, 355
Periti, P. 323, 324, 332
Perova, S. D. 363, 373
Perroteau, I. 360
Perussia, B. 362, 372
Peschel, C. 362, 372
Peschle, C. 362, 373
Peters, G. 84, 90
Peters, G. J. 169, 179, 181
Peters, K. A. 37, 49
Petrie, C. R. 167, 171, 172, 180
Petrini, M. 362, 373
Pettican, P. 156, 166
Pfeffer, K. 362, 373
Philip, I. 360, 367
Philip, T. 360, 367
Phillips, R. A. 362, 371
Piechaczyk, M. 361, 369
Pigeon, D. 101, 104, 109
Pike, L. J. 161, 166
Pilkis, J. 283, 304
Pilkis, S. J. 283, 296, 304
Pillwein, K. 339, 353, 356
Pilz, R. B. 147, 164, 177, 178, 182
Pinedo, H. M. 176, 182
Piper, P. J. 310, 319
Pizzorno, G. 323, 324, 332
Platt, T. 125, 143
Pledger, W. J. 360, 368
Plowman, J. 338, 339, 356
Pogolotti, A. L. 14, 18–20
Polvinen, K. 87, 88, 91
Pope, L. E. 3–11
Popper, H. 268, 318
Posch, L. 201–216
Pösö, H. 85, 90
Postnikova, Z. A. 363, 373
Potter, G. K. 366, 374
Potter, J. D. 94, 108
Potter, V. R. 271, 272, 279
Pouyssegur, J. 361, 369
Powell, M. 43,44, 48, 50
Powell, W. S. 309, 319
Powis, G. 167, 180
Poznansky, M. J. 65, 75
Prajda, N. 185, 198, 335–356
Preiss, B. 62, 74
Preiss, J. 204, 214
Prentis, S. 214
Presta, L. G. 221, 235
Price, E. M. 7, 8, 10
Price, G. M. 338, 339, 355
Pricer, W. E., Jr. 125, 142
Priest, D. 13–21
Prochaska, H. J. 238–243, 245, 246, 249, 250
Prugh, J. D. 55, 56, 61, 62
Pryor, J. S. 59, 63
Prystowsky, M. 361, 370
Przybilski, F. 283, 284, 294, 305
Purwin, C. 284, 305, 306
Puschendorf, B. 210, 212, 215
Putney, J. W. 34, 360, 367
Putter, I. 53, 60
Putzer, H. 210, 212, 215
Pyun, K. H. 362, 371

Quagliata, F. 132, 144
Quastel, J. H. 142

Rachmilewitz, E. 84, 90
Rader, J. I. 9, 11
Raina, A. 85, 90

Raivio, K. O. 169, 174, 178–182
Rakowicz-Szulczynska, E. M. 361, 370
Rall, T. W. 182
Ramnaraine, M. L. R. 132, 144
Ramsay, G. 360, 369
Ran, W. 361, 369, 370
Randall, R. J. 27, 34, 95, 108, 254, 268
Rapp, S. 307–311, 318
Rastetter, J. 205, 214
Rath, V. L. 219, 235
Ratner, L. 360, 368
Rausch, W. 104, 109
Rechsteiner, M. 70, 71, 77
Reddy, E. P. 360, 361, 368, 371
Reddy, G. P. V. 114, 118, 120, 122
Reddy, J. K. 313, 319
Reeb, B. B. 237, 248
Reed, J. 361, 370
Reeves, B. 361, 370
Reffel, A. C. 360, 368
Regazzi, R. 202, 215
Regen, D. M. 283, 304
Reichard, P. 113–115, 118, 121, 122, 138, 144
Reichert, A. 205, 214
Reichert, H. 205, 214
Reimann, E. M. 94, 108
Reimann, S. P. 237, 248
Reis, R. J. S. 84, 90
Reiss, P. D. 150, 165
Rennick, D. 361, 369
Resink, T. J. 37, 50
Reutter, W. 253–269
Revankar, G. R. 167, 168, 171, 172, 174–176, 178, 180, 181, 185, 187, 188, 198
Reynolds, R. K. 361, 371
Reznikow, D. C. 65, 66, 72, 75
Rhee, L. 201, 213
Rhee, M. S. 13–21
Rhoads, C. P. 125, 142
Rhoads, J. E. 248
Rich, A. 90
Richards, R. 113–123
Richardson, H. L. 237, 248
Richman, R. A. 85, 90
Richtand, N. M. 103, 109
Rick, W. 306
Rideout, J. L. 125, 132, 136, 142
Rider, M. H. 283, 297, 303, 304
Riederer, P. 104, 109
Riegel, B. 237, 248
Rijkers, G. T. 129, 132, 143
Rijksen, G. 129, 132, 143
Riley, T. A. 174, 175, 181
Ringsdorf, H. 210, 212, 215
Rittle, K. E. 55, 56, 62
Rixon, R. H. 113, 114, 117–119, 121
Rizzoli, R. 25-34
Ro, J. 361, 371
Robbins, K. C. 360, 368, 369
Robbins, K. S. 360, 368
Roberts, A. B. 341, 345, 356, 360, 367
Roberts, J. J. 210, 212, 215
Robins, M. J. 126, 143
Robins, R. K. 167–182, 185, 187, 188, 198, 199, 338, 351, 352, 356
Robishaw, J. D. 361, 369
Rodeck, U. 361, 365, 370, 374
Rodenhuis, S. 323, 324, 333
Rodwell, V. W. 65, 68, 72–74, 77
Roetker, A. W. 125, 142
Rogel, J. 57, 62
Rogers, D. H. 55, 56, 61, 68, 76
Rogers, J. 159, 166
Rogers, S. 70, 71, 77
Rohlik, Q. T. 365, 374
Rokach, J. 308, 309, 312, 318
Romanini, A. 323–333
Roony, C. S. 55, 56, 61
Roos, A. 95, 108
Rosbash, M. 169, 181
Rose, G. D. 221, 235
Rose, I. A. 278, 280
Rose, L. M. 185, 198
Rosebrough, N. J. 27, 34, 95, 108, 254, 268
Rosen, M. 362, 372
Rosenberry. T. L. 262, 269
Rosenfeld, M. G. 361, 370
Rosenkranz, H. S. 125, 142
Rosner, M. R. 361, 370
Rosowsky, A. 15, 20, 323, 324, 333
Ross, A. 84, 90
Ross, A. H. 365, 374
Ross, D. D. 129, 132, 143
Ross, E. M. 360, 369
Roth, D. G. 147, 158, 164, 179, 182, 188, 199
Roth, R. H. 93, 100, 104, 107, 109
Rothenberg, P. 360, 367
Rothrock, J. 54, 57, 58, 60

Rothstein, A. 204, 214
Rousseau, G. G. 283, 297, 303, 304
Rousseau, R. J. 167, 180, 185, 187, 188, 198
Rouzer, C. A. 307, 317
Rovera, G. 362, 372
Rowley, J. D. 361, 371
Rozell, B. 114, 121
Rozengurt, E. 28, 34, 148, 149, 151, 153, 156, 158, 161, 164–166, 202, 204, 216, 360, 367
Rubin, E. H. 114, 121
Rubin, H. 162, 166
Rubio, R. 182
Rudali, G. 237, 248
Ruderman, J. V. 114, 121
Rudney, H. 55, 56, 61, 68, 76
Ruscetti, F. W. 361, 366, 369, 374
Russell, D. H. 81, 89
Russell, D. W. 65, 70, 72, 74
Russell, P. B. 125, 142
Russo, A. 238, 248
Rutberg, L. 271, 279
Ryan, J. 56, 62
Ryden, L. 277, 280

Sabine, J. R. 75
Sachs, L. 362, 366, 372, 374
Saeki, M. 59, 63
Safirstein, R. L. 210, 212, 215
Sakagami, H. 366, 374
Sakai, T. 59, 64
Sakai, Y. 59, 64
Sakakibara, S. 253, 267
Salmons, B. 202, 203, 214
Salomon, D. S. 201, 204–206, 208, 213, 360, 368
Samuelson, B. 307, 309, 317, 319
Sanchez, V. 286, 306
Sander, F. 241, 249
Sanderson, C. J. 362, 372
Sanghvi, Y.S. 168, 171, 174–176, 178, 180, 181
Sano, K. 360, 368
Santamaria, A. B. 241, 249, 250
Santi, D. V. 14, 18–20, 128, 143
Santi, P. 25, 31, 33
Santoli, D. 362, 372
Santon, J. B. 361, 370
Santos, E. 361, 371
Sargent, M. G. 360, 368
Sariban, E. 362, 373
Sarimo, S. R. 253, 267
Sarngadharan, M. G. 362, 371
Sartorelli, A. C. 169, 181, 351, 352, 356
Sasaki, T. 71, 77
Sato, A. 125, 126, 142
Saunders, P. 177, 182
Savarese, T. M. 125, 137, 142
Savin, K. 360, 369
Sawicki, W. L. 331, 333
Scalabrino, G. 85, 90
Scallen, T. J. 65, 66, 68, 72, 75
Scanlon, K. J. 210, 212, 215
Schachter, D. 318
Schecter, I. 68, 76
Schellenberger, W. 283–306
Scher, C. D. 360, 368
Scheuber, P. H. 307, 318
Scheuber, P. J. 307, 309, 311, 314, 315, 317
Schimke, R. T. 71, 77
Schlessinger, J. 360, 369
Schlick, E. 366, 374
Schmidt, F. W. 236
Schmidt, G. 128, 143
Schmidt, T. 35–50
Schneider, J. A. 161, 166
Schnitzer-Polokoff, R. 58, 63
Schölmerich, J. 311, 319
Schönberg, G. A. 54, 61
Schrecker, A. W. 129, 132, 143
Schreiber, R. D. 362, 372
Schuldiner, S. 360, 367
Schulz, I. 360, 367
Schulz, J. 284, 306
Schur, P. H. 362, 372
Schwab, M. 361, 371
Schweinsberg, P. D. 167, 180, 185, 198
Scolnick, E. M. 360, 369
Scrace, G. T. 360, 368, 369
Seeburg, D. H. 360, 369
Seegmiller, J. E. 150-152, 165, 169, 170, 175–177, 180–182
Sefton, B. M. 360, 369
Seglen, P. O. 310, 319
Selleri, L. 361, 370
Selvaraj, P. 268
Seppänen, P. 82, 83, 87, 89
Serafin, W. E. 309, 319
Serizawa, N. 54, 61

Serizawa, S. 54, 61
Seto, S. 174, 181
Seto, S. 397, 174, 181
Shapiro, D. J. 72, 77
Shatton, J. B. 363, 373
Shealy, Y. F. 167, 180
Shecter, I. 57, 62
Sheehan, L. 253, 267
Shelton, E. 147, 158, 164, 179, 182, 188, 199
Shenolikar, S. 37, 50
Sheremet'evskaya, T. N. 114, 118, 119, 122
Sheridan, A. P. 366, 374
Sherwood, R. F. 323, 324, 332
Shibai, H. 362, 371
Shigematsu, H. 59, 63
Shigesada, K. 147, 161, 164, 166, 170, 175, 181
Shih, T. Y. 360, 369
Shimada, H. 54, 60, 148, 164
Shimada, Y. 55, 56, 58, 61
Shimizu, K. 362, 371
Shimizu, N. 115, 122, 361, 370
Shionoya, S. 210, 212, 215
Shiota, M. 71, 77
Shirron, C. 93, 100, 107
Shoemaker, D. D. 338, 339, 356
Shoji, M. 205, 206, 214
Shrewsbury, M. A. 65, 66, 72, 75
Shubik, P. 237, 248
Sibanda, B. L. 222, 236
Sibley, D. R. 72, 77
Sidi, Y. 130, 143
Siebenlist, U. 361, 369
Sies, H. 318
Siesjö, B. K. 95, 108
Sikorska, M. 113–123
Silaeva, S. A. 114, 118, 119, 122
Silber, R. 132, 144
Simms, E. S. 151, 165
Simon, M. I. 360, 369
Simoni, R. D. 56, 62, 65, 70, 71, 74, 75, 77
Sinensky, M. 57, 58, 63, 65
Sinervirta, R. 82–89, 91
Singer, S. 125, 142
Singer, T. P. 271, 279
Sinnet-Smith, J. W. 28, 34, 156, 165
Sirotnak, F. M. 8, 11, 19
Sjoerdsma, A. 93, 107
Skalnik, D. G. 65, 70, 71, 75, 77
Skaper, S. D. 150, 151, 165, 177, 182
Skog, S. 114, 121
Slater, T. E. 210, 212, 215
Slater, T. F. 250
Smale, T. C. 53, 60
Smart, R. C. 241, 250
Smee, D. F. 168, 172, 174, 175, 180, 181
Smith, A. L. 338, 356
Smith, G. 159, 166
Smith, H. C. 119, 123
Smith, K. A. 361, 370
Smith, M. J. 241, 249
Smith, M. L. 148, 149, 158, 162, 164
Smith, M. T. 217, 221, 241, 249
Smith, R. A. 167, 171, 172, 180
Smith, R. G. 167, 180, 185, 198
Smith, R. J. 148, 149, 158, 162, 164
Smith, R. L. 54–56, 61, 62
Smithers, D. 185, 198
Snyder, S. H. 81, 89
Sobermann, R. J. 309, 315, 319
Sokawa, Y. 84, 90
Sokoloski, J. A. 351, 352
Söling, H.-D. 35–50
Somogyi, J. 161, 166
Sonenshein, G. E. 361, 369, 371
Song, B.-J. 313, 314, 319
Souno, R. 238, 248
Southam, C. M. 125, 142
Souza, L. M. 366, 374
Spaapen, L. J. M. 129, 132, 143
Spach, D. H. 361, 370
Sparnins, V. L. 243, 250
Spector, S. 93, 107
Sperling, O. 170, 181
Spiazzi, A. 262, 269
Spindler, C. D. 68, 76, 177, 182
Sporn, M. A. 360, 367
Sporn, M. B. 341, 345, 356
Sposi, N. I. 362, 373
Springer, A. T. 268
Springer, J. P. 53, 54, 57, 58, 60, 61
Spurgin, G. E. 210, 212, 215
Srimatkandada, S. 323, 324, 332
Srinivasan, P. R. 83, 84, 89
Srivastava, P. C. 167, 180, 185, 187, 188, 198, 338, 356
Stachelin, T. 123
Stall, G. E. J. 129, 132, 143
Standart, N. M. 114, 121

Stanger, D. W. 237, 248
Stapley, E. 54, 57, 58, 60
Starnes, M. C. 14, 18, 20
Steffan, A.-M. 307, 317
Stein, J. M. 201, 212, 214
Stein, R. 204, 214
Steinkampf, R. W. 193, 199
Stemme, S. 114, 121
Stene, D. O. 308, 309, 312, 314, 318
Steplewski, Z. 365, 374
Stern, J. B. 361, 370
Sternberg, M. J. E. 222, 236
Stevens, B. 70, 76
Steward, J. A. 331, 333
Stewart, C. S. 65, 66,75
Stewart, H. B. 283, 304
Stigall, D. L. 271, 279
Stiles, C. D. 360, 368, 361, 369
Stock, C. C. 125, 142
Stockwell, P. 360, 369
Stoeckler, J. D. 134, 144
Stokker, G. E. 55, 56, 61, 62
Stonik, J. A. 65, 66, 71, 74, 75, 76
Stoop, J. W. 129, 132, 143
Strath, M. 362, 372
Streb, H. 360, 367
Strong, W. L. P. 59, 63
Stroobant, P. 360, 368, 369
Stroud, R. M. 68–70, 72, 76
Struck, H. 254, 268
Stubblefield, E. 132, 144
Studzinski, G. P. 362, 373
Stumpo, D. J. 361, 370
Subak-Sharpe, J. H. 152, 165
Sudo, H. 59, 64
Sugar, J. 338, 341, 345, 351–353, 355
Sugden, P. H. 94, 108
Sugimoto, H. 363, 373
Sugiyama, T. 238, 248
Suh, M. 114, 117, 121
Sultzman, L. A. 201, 213
Sumimoto, H. 319
Sunagawa, E. 54, 61
Sutyak, J. P. 309, 315, 319
Suzuki, N. 147–166
Suzuki, T. 360, 367
Sweeney, D. W. 71, 77
Switzer, R. L. 147, 158, 164
Sylvia, V. L. 25, 33
Szelenyi, J. 338, 341, 345, 351–353, 355
Szentivanyi, A. 249, 366
Taga, T. 362, 371
Taggen, A. Y. 115, 118, 122
Taira, M. 148, 164, 170, 181
Takai, Y. 156, 166, 201, 204, 213, 214, 360, 368
Takano, S. 362, 371
Takeda, E. 338, 355
Takeda, K. 362, 363, 366, 372, 373, 374
Takeda, R. 59, 64
Takemoto, T. 253, 267
Takenawa, T. 37, 50
Takeri, M. R. 338, 339, 355
Takeshige, K. 319
Takezawa, M. 362, 371
Takuma, T. 362, 363, 372, 373
Talalay, B. 202, 210, 215
Talalay, P. 17–20, 237–250, 324, 325, 330, 333
Talha, S. 153, 165
Tallant, A. 37, 50
Talwar, H. S. 25, 30, 33
Tam, A. W. 360, 369
Tamatani, T. 362, 372
Tan, M.-T. 177, 182
Tanaka, K. 128, 143
Tanaka, M. 54–56, 58
Tanaka, R. D. 57, 58, 62, 63, 65, 67, 68, 72, 74, 77
Tanaka, S. 128, 143
Tanigawa, N. 127, 143
Tanimoto, T. 156, 165
Tanzawa, K. 55–59, 61–63
Tartakoff, A. M. 262, 269
Tarui, C. 55, 56, 58, 61
Tatami, R. 59, 64
Tatibana, M. 147–166, 170, 175, 181
Tauber, R. 266, 269
Taylor, E. C. 13, 20
Taylor, I. W. 130, 143, 187, 198
Taylor, M. V. 159, 166
Taylor-Papadimitriou, J. 202, 204, 216
Telford, D. E. 59, 63
Teplow, D. B. 360, 369
Terahara, A. 54, 61
Terao, K. 247, 250
Terasaki, M. 162, 166
Thannhauser, S. J. 128, 143
Thelander, L. 113, 114, 115, 118, 121, 122, 138, 144
Theologides, A. 84, 90
Thiarajan, P. 362, 372

Thibault, J. 101, 104, 109
Thies, H. 210, 212, 215
Thoenen, H. 94, 108
Thomas, A. P. 360, 368
Thomas, G. 208, 215
Thomas, M. W. 261, 263, 268
Thomas, T. P. 25, 30, 33
Thompson, C. B. 361, 370
Thompson, D. M. 361, 370
Thompson, L. F. 177, 182
Thompson, R. H. 53, 60
Thompson, R. L. 125, 142
Thor, H. 241, 249
Thornton, J. M. 222, 236
Tien, H. T. 210, 212, 215
Ting, C. C. 362, 371
Tischler, A. S. 94, 108
Tobert, J. A. 57, 59, 62, 63
Togari, A. 106, 110
Togert, R. 58, 63
Tohjoh, F. 253, 267
Tokuda, M. 37, 50
Tokunaga, I. 253, 267
Tomida, M. 362, 371
Tong, W. P. 331, 333
Tonin, P. N. 83, 84, 89
Torelli, G. 361, 370
Torelli, U. 361, 360
Tormanen, C. D. 65, 66, 68, 72, 75
Totty, N. 360, 369
Tran-Thi, T.-A. 266, 269
Tribukait, B. 114, 121
Tricot, G. J. 335–356
Trinchieri, G. 362, 372
Tripp, E. H. 130, 143
Tronick, S. R. 360, 368
Tsien, R. Y. 360, 367
Tsubokawa, S. 54, 61
Tsuchida, S. 261, 263, 268
Tsuda, T. 156, 165, 166
Tsuji, T. 362, 371
Tsujita, Y. 53–63
Tubo, R. A. 27, 34
Tuchman, M. 132, 144
Tung, H. Y. L. 37, 50
Turner, A. J. 262, 263, 268, 269
Turner, M. K. 132, 144
Tushurashvili, P. R. 272, 274, 279
Tuttle, J. V. 125, 132, 136, 139, 142
Tweardy, D. J. 362, 372
Tyrsted, G. A. 169, 181, 188, 198
Überall, F. 210–216
Udenfriend, S. 93, 107
Ueda, N. 238, 248
Ullrich, A. 201, 213, 360, 369
Underwood, L. E. 85, 90
Unger, T. 254, 268
Urawa, H. 362, 372
Uyeda, K. 283, 303, 305
Uzman, B. G. 324, 333

Valtieri, M. 362, 372
Van Damme, J. 283, 297, 303, 304
Van Schaftingen, E. 283, 284, 287, 288, 296, 297, 302–305, 310
Van Snick, J. 283, 304
Van Wyk, J. J. 85, 90, 360, 368
Vandekerckhove, J. 283, 297, 303, 304
Vandenbark, G. R. 360, 368
Vanderwerff, H. 125, 142
Vanlancker, J. L. 115, 122
Vanyder Saag, P. T. 360, 367
Vara, F. 156, 166
Varello, M. 365, 374
Varmus, H. E. 360, 361, 368, 369
Vassilev, P. M. 210, 212, 215
Veech, R. L. 150, 165
Veeger, C. 271, 279
Veerkamp, J. H. 169, 179, 181
Vega, G. L. 59, 64
Venegas, P. L. 243, 250
Venturelli, D. 361, 370
Verma, I.-M. 362, 372
Vevert, J. P. 81, 89
Vicentini, L. M. 159, 166
Vigny, A. 106, 110
Villafranca, J. J. 272, 279
Villaneuva, M. E. 283, 284, 301, 305
Vinogradov, A. D. 271–280
Vissers, S. 283, 305
Viswanadhan, V. N. 171, 181
Vitale, M. 25, 30, 31, 33
Vitols, K. S. 3–11
Vogelstein, B. 361, 370
Vogler, W. R. 205, 206, 214
Vogt, P. K. 360–362, 368
Voina, S. J. 85, 90
Volk, B. A. 253, 254, 266, 267, 269

Vormann, J. 159, 166
Vulliet, P. R. 101, 104, 109

Waalwijk, C. 84, 90
Wadman, S.K. 129, 132, 143
Wahlfors, J. 81-91
Waisman, D. M. 37, 50
Waite, M. 48, 50
Wakasugi, T. 59, 64
Wakefield, L. M. 362, 372
Walborg, E. F. 261, 263, 268
Walker, G. M. 162, 166
Walker, P. R. 113–123
Wallace, R. W. 37, 50
Wang, M. C. 176, 182
Wang, X. F. 362, 371
Warren, D. J. 362, 372
Wartman, W. B. 237, 248
Wasson, D. B. 174, 181
Wasteson, A. 360, 368
Watanabe, D. 59, 64
Watanabe, Y. 55, 56, 58, 59, 61, 63
Wataya, Y. 128, 143
Waterfield, M. 201, 213
Waterfield, M. D. 360, 368, 369
Watson, J. A. 58, 63
Watson, J. D. 363, 373
Wattenberg, L. W. 238, 243, 249, 250
Waxman, S. 210, 212, 215
Way, S. C. 67, 68, 76
Webb, J. L. 135, 144
Weber, G. 138, 144, 147, 164, 168, 169, 180, 185, 188, 198, 335–356, 364, 373
Weber, W. 361, 370
Webster, H. K. 351, 352, 356
Weckbecker, A. 127, 132, 143
Weckbecker, G. 125–144, 307, 308, 309, 310, 311, 315, 317, 318
Weeden, D. S. 261, 263, 268
Weichselbaum, R. B. 362, 371
Weinberg, J. B. 362, 372
Weinberg, R. A. 203, 214, 360–362, 368, 371
Weiner, M. W. 164
Weinhouse, S. 363, 373
Wells, R. 70, 71, 77
Welte, K. 366, 374
Weltzien, H. U. 205, 214
Wendelborn, D. F. 309, 315, 319
Wensing, E. J. 83, 84, 89
Werner, M. H. 361, 370
Wesenberg, J. C. 276, 280
Westermark, B. 360, 368, 369, 361
Wharton, W. 360, 368
Wheeler, G. P. 125, 142
White, M. F. 161, 166
Whitehead, M. V. 10
Whitehead, V. M. 20
Whiteley, J. M. 9, 11
Whitfield, J. F. 113–123
Whitlock, J. P. Jr. 55, 241, 249
Whittle, N. 360, 368, 369
Wickham, P. S. 67, 68, 76
Widman, K. H. 205, 214
Wilker, D. 307, 309, 311, 314, 315, 317, 318
Wilkin, M. L. 125, 142
Wilkinson, D. S. 128, 143
Willard, A. K. 54–56, 61 62
Williams, L. T. 360, 369
Williams, R. I . 360, 368
Williams, R. T. 239, 249
Williams, S. R. 114, 117, 118, 122
Williams-Ashmann, H. G. 238, 248
Williamson, J. R. 360, 368
Willingham, M. C. 360, 369
Willis, E. H. 174, 181
Willis, R. C. 147, 150, 151, 164, 165, 167–182, 188, 199
Wilson, A. Y. 125, 142
Windass, J. D. 26, 33
Winqvist, R. 83–85, 89
Wolf, H. 210, 212, 215
Wolf, M. E. 104, 109
Wolfard, T. S. 187, 188, 193, 195
Wong, A. J. 361, 370
Wong, G. A. 58, 63
Wong-Staal, F. 360, 368
Woo, S. 179, 182
Wood, W. F. 167, 180
Woodcroft, K. 59, 63
Woodgett, J. R. 37, 49, 104, 109
Wright, D. G. 351, 352, 356
Wright, J. A. 115, 118, 122, 123
Wu, L. 82, 89
Wyngaarden, J. B. 170, 18

Yamada, K. 148, 164, 170, 181
Yamada, Y. 335, 336, 338–341, 348, 351, 354, 355

Yamaji, Y. 335–356
Yamamoto, A. 59, 63
Yamamoto, M. 59, 63
Yamamoto, S. 109
Yamamoto-Yamaguchi, Y. 362, 371
Yamashita, H. 54, 61
Yamashita, S. 36, 49
Yamashita, T. 156, 165
Yamashogi, S. 284, 294, 295, 302, 305
Yamauchi, Y. 59, 63
Yamauichi, T. 93, 100, 103, 104, 107, 108, 109
Yang, C.-H. 8, 11
Yang, S. E. 125, 142
Yang-Feng, T. L. 201, 213
Yarden, Y. 360, 369
Yasukawa, K. 362, 371
Yen, R. C. K. 169, 181, 170
Yohioka, A. 128, 143
Yokogawa, Y. 362, 371
Yokoyama, M. 283, 303, 305
Yoshimura, A. 59, 64
Yoshimura, N. 70, 77
Youdale, T. 113–123
Yu, B. 201, 214
Yuan, G. A. 323, 324, 333
Yumoto, N. 70, 77
Yunis, A. A. 363, 373

Zachary, I. 156, 165
Zaltzman-Nirenberg, P. 93, 107
Zammit, V. A. 65, 66, 75, 76
Zannoni, V. G. 241, 250
Zappia, V. 86, 91
Zegers, B. J. M. 129, 132, 143
Zevely, E. M. 5–7, 10
Zhen, W. 335–356
Zhuang, Y.-X. 360, 367
Zimmer, T. 253–269
Zinck, J. J. 275, 279
Zokas, L. 362, 372
Zoref, E. 170, 181
Zou, R. 126, 143
Zuurendonk, P. K. 150, 165

SUBJECT INDEX

Acetyl CoA carboxylase (EC 6.4.1.2)
  phosphorylation 65
Acetyl CoA synthase (EC 6.2.1.1)
  induction by compactin 58
N-Acetylation in leukotriene metabolism 307–309, 315
Aconitase (EC 4.2.1.3)
  comparison with OAT-2 277, 278
  in mitochondria 272
Acrylate analogs induction of quinone reductase 244, 245
Acyclaminoacylpeptidase (EC 3.4.19.1), DPP IV and 255, 256
Adaptation, evolution of proteins and 221–223
Adenine
  as tracer in PRPP flux studies 151, 156
  on DAP inhibition of cell growth 132 133
  on DAPdR inhibition of cell growth 132, 133
Adenine nucleotide synthesis stimulation by EGF + insulin 157
  Mg^{2+} on 161
Adenine phosphoribosyltransferase (AMP:pyrophosphate phosphoribosyl transferase, EC 2.4.2.7)
  MRPP on 175
  PRPP substrate 170
Adenosine
  on MRPP toxicity 177
  on ribonucleotide pools 197
  + pentastatin + uridine, protection from APP 193, 194
  structure comparison with exocyclic amino nucleosides 168
Adenosine deaminase (EC 3.5.4.4)
  ARPP substrate 171, 172, 179
  inhibition by ENHA 177
  MRPP substrate 171
  on DAPdR 125, 126, 139
    EHNA inhibition 139
    substrate comparison 140
Adenosine kinase (ATP:adenosine-5'-phosphotransferase, EC 2.7.1.20)
  activation of APP 195, 197
  exocyclic amino ribonucleoside substrates 167, 168, 171
  MRPP inhibition 172, 175
Adenosylmethionine decarboxylase (AdoMetDC, EC 4.1.1.50) activity in CHO-ODC clones 87
ADP inhibition of PRPP synthetase 147
ADP reductase (*see also* Ribonucleotide reductase)
  antisera on 117, 118
  M1 catalytic site 118
Adriamycin-resistant P388 cells, APP on 192, 193
Alcohol dehydrogenases (EC 1.1.1.1)
  structural variations 224, 235
  active site residues algorithm 235
  computer analysis 226, 227, 229, 230
  fungal, conserved residues 231–233
  fungal, variable residues 234
  mammalian, conserved residues 234
  mammalian, variable residues 232, 233
  plant, conserved residues 234
  sequence alignment 225
    pairwise identities 225
  site-directed mutagenesis 230, 231, 233
  substrate specificity 231
  surface residues detection
    adaptive variation removal 226, 227
    algorithm 230, 235
    confirmation of predictions 229, 230
    table of variable residues 227-229
  surface residues in evolution 234
Alkaline phosphatase (EC 3.1.3.1) in yeast
  activity during growth 289, 301, 302, 304
  assay 286
  chromatography 292-294
Alkyl-lysophospholipids
  anti-tumor activity 205
  BM 41440 205
  ET-18-OCH_3 206
  protein kinase C inhibition 205
Allopurinol

combination chemotherapy with tiazofurin 341, 348
induced inhibition of guanine salvage 348
on plasma hypoxanthine concentration 341, 348-350
Amidophosphoribosyltransferase (5-phosphoribosylamino:pyrophosphate phosphoribosyltransferase, EC 2.4.2.14)
Mg^{2+} requirement 161
PRPP substrate 170
2-Aminoadenine *see* 2,6-Diaminopurine
2-Aminodeoxyadenosine *see* 2,6-Diaminopurine-2'-deoxyriboside
Aminoglycosides on *de novo* purine biosynthesis 185
8-Aminoguanosine
on cell cycle progression 130
with DAPdR on cell growth 134, 135, 141
4-Amino-8-[β-D-ribofuranosylamino]pyrimido[5,4-d]pyrimidine (ARPP, APP, NSC 283867)
activation by adenosine kinase 195
anomerization 171, 172, 174
anti-tumor properties 185-198
as substrate for adenosine deaminase 171, 172
biological activity 168
chemotherapy, L1210 leukemia 169, 188, 198
chemotherapy, M16/c carcinoma 188, 198
cytotoxicity studies in culture 171, 178, 189
cytotoxicity of proliferating and plateau-phase CHO cells 191
effect of nucleotide pools on action 193, 194
inhibition
of carcinoma and leukemia cell lines 190, 198
of *de novo* nucleotide biosynthesis 174, 175
of nucleic acid synthesis 196–198
of PRPP synthetase 168–179, 185
metabolic activation to monophosphate 195, 197
on cell cycle phase distribution 191–193, 198
on cell nucleotide content 172, 173
on dNTP pools 195
on P388/ADR and wild type P388 192, 193
on PRPP levels 176
on PRPP synthesis 177
structure 168, 186
4-Amino-8-[β-D-ribofuranosylamino] pyrimido[5,4-d]pyrimidine 5-phosphate(ARPP-MP, APP-MP)
cytotoxicity to murine and human cells in culture 189
inhibition of carcinoma and leukemia cell lines 190
inhibition of PRPP synthetase 197
on ribonucleotide pools 197
solid tumor selectivity 189
cAMP in yeast, glucose concentration and 287, 289, 301
Anomerization
of ARPP 171, 172, 174
of MRPP 171
Anticancer chemotherapy *see* Chemotherapy
Antifolate combinations, assessment of synergy 17, 18
Arabidopsis alcohol dehydrogenase, analysis of sequence 225–229
Aryl hydrocarbon hydroxylase (AHH)
activation of carcinogens 240
induction mechanism, role of Ah receptor 240
Aspergillus nidulans alcohol dehydrogenase, analysis of sequence 225
Aspergillus terreus production of monacolins 54
ATP inhibition of PFK-2 activity 286
Mg^{2+} on 296, 297, 302, 303
ATP:protein transphosphorylase (EC 2.7.1.37) on tyrosine hydroxylase activity 93
8-Azaguanine inhibition of carcinoma and leukemia cell lines 190
Azaserine inhibition of carcinoma and leukemia cell lines 190
Azo dyes
activation of cytochrome P-450 239

activation of phase II enzymes 241
carcinogenesis and anticarcinogenesis 238

Bombesin
+IGF-I on mouse 3T3 cells 26
on DNA polymerases 28, 30, 31
on lipid phosphorylation 30
+insulin
on human fibroblasts 156
on mouse 3T3 cells 158, 163
on mouse 3T6 cells 156
Bovine heart mitochondria
aconitase in 272
oxaloacetate keto-enol tautomerase in 272
Bovine kidney MDBK cells ribonucleotide reductase subunit formation 115
2(3)-tert-Butyl-4-hydroxyanisole (BHA)
anticarcinogenic activity 238
phase II enzyme induction 242
3,5-di-tert-Butyl-4-hydroxytoluene (BHT)
anticarcinogenic activity 238

Cadaverine on ornithine decarboxylase production 82
Calpactin 1 *see* Lipocortin 2
Calpactin 2 *see* Lipocortin 1
Calpain (Ca-dependent thiol protease)
HMG CoA reductase cleavage and 67, 71, 73
concentration effects 67, 68
sites 69
protein kinase-C cleavage 71
Cancer (*see also* Chemotherapy) cell proliferation determinants 359–367
Carbachol (muscarine agonist)
acyl-transfer and 46
on DAG acyltransferase activity 37, 38
on DAG kinase activity 37, 38
on diacylglycerols 35, 45
on lyso-phosphatidate acyltransferase activity 37, 38
on parotid gland lobules 35, 42, 49
Carbamoyl-phosphate synthetase II [carbon dioxide:L-glutamine amido-ligase (ADP forming, carbamate phosphorylating),EC 6.3.3.5]
ARPP on 170
Mg^{2+} requirement 161
PRPP activation 170
Carboxypeptidase G_1 (CPG_1)
antitumor activity 323, 330
degradation of folates 323, 330
Carboxypeptidase G_2 (CPG_2)
antitumor activity 323, 330
degradation of folates 323, 330, 332
assay for 325–327
enhancement of TMTX cytotoxicity 323–332
combination chemotherapy and 331
synergism in CCRF-CEM cell lines 323, 329
drug concentrations on 330
on parent and resistant CCRF-CEM cell lines 328, 329
Carcinoembryonic antigen (CEA) cell immaturity marker 363
Carcinogenesis, chemical
protection against 237–247
bifunctional enzyme (phase I) induction 239, 247
monofunctional enzyme (phase II) induction 239, 242, 247
Carcinomas
human
colon HCT-8 189
lung large cell LXFG 210–212
mammary MCF-7 187, 189
mouse
colon 26 187, 189
Ehrlich ascites 82, 87, 114, 117, 118
mammary 16/C 187, 198
mammary TA3 114
rat Walker 202, 208–211
Catecholamines
biosynthetic pathway 93
on tyrosine hydroxylase 98–100, 106
inactivation/stabilization model 101
CDP reductase (*see also* Ribonucleotide reductase)
antisera on 117, 118
M1 catalytic sites 118
Cell
adhesion
anchorage mechanisms, malignant transformation and 262
DPP IV and 259, 266

cycle-dependent proto-oncogene expression 361
differentiation (*see also* Differentiation factors)
human ML-1 cells 363, 364, 366
polyphosphoinositides and 25–32
tiazofurin induced
in HL-60 cells 342–345
in human leukemia 348, 350, 351
in K-562 cells 351, 352
immaturity markers 363
Central nervous system, tyrosine hydroxylase regulation in 93–107
Chemical carcinogenesis *see* Carcinogenesis
Chemoprotection against carcinogens
active compounds 238
enzyme induction and 239–247
Michael acceptor requirement 243–247
model system for 240, 241
Chemotherapy
antifolate combination 14
APP (ARPP) 168, 179, 188, 198
by nucleosides and derivatives 167
DAP 125
DAP combination 134
DAPdR combination 134, 138
DDATHF with antifolates 13–19
MRPP 168, 179
MTX 3, 10
multiple drug resistance phenotype 193
of hypercholesterolemia 53–60
of L1210 leukemia 187, 188
of M16/c carcinoma 188
PDDF with antifolates 13–19
protein kinase C inhibitors 201–213
cis-DPP synergy 210-212
combination 209
PRPP synthetase target 169, 186
tiazofurin on AML 335–354
-allopurinol combination 348–350
considerations of dose after relapse 346–350, 354
induced differentiation 351, 352, 354
rationale for 335, 339
TMTX + CPG_2 combination 331
use of differentiation factors 366, 367
Chinese hamster *see* Hamster
2-Chloro-2'-deoxyadenosine-5'-phosphate (2-Cl-dAMP) inhibition of carcinoma and leukemia cell lines 190
Cholesterol
biosynthesis
enzymes of 53
inhibition by compactin
in animals and humans 56, 57
in cultured cells 56
levels, compactin and analogs on 58, 59
on HMG CoA reductase activity 65, 66, 71–73
LDL-Cholesterol, mechanism for lowering 59, 60
Cholesterol 7α-hydroxylase (hepatic), compactin on 58
Cholestyramine with mevinolin on HMG CoA reductase 57
Chromosome
localization of human ODC sequences 83, 84
translocations on oncogene activation 361
Cinnamates
anticarcinogenic properties 238
induction of quinone reductase 244, 245
Citrate synthase (EC 4.1.3.7) oxaloacetate utilization and 276
Clam ribonucleotide reductase subunit formation 114
Clofibrate induction of leukotriene ω-oxidation 313, 314, 317
Colchicine on PRPP and nucleotide syntheses 162
Compactin ML-236A
source of 53
structure 54
activity relationship 56
Compactin ML-236B
clinical studies 55, 57, 59
induction of HMG CoA reductase 57, 58
inhibition of HMG CoA reductase 53, 56, 60
microbial and chemical modification 54
sources of 53
structure 54
activity relationship 55
Compactin ML-236C
source of 53

structure activity relationship 56
Conformational analysis application to proteins 219, 220, 234, 235
Coumarin
anticarcinogenic property 243
on glutathione S-transferases 243
structure 242
Coumarins induction of quinone reductase 241–244
Crotonate analogs induction of quinone reductase 244, 245
Cysteinyl leukotrienes *see* individual leukotrienes
Cytochrome P-450
compounds activating 239
induction in 1c1c7 cell system 241
phase I enzyme 239

DAP riboside 5'-triphosphate
from DAP 137, 138
from DAPdR 137
3-Deazaguanine
inhibition of carcinoma and leukemia cell lines 190
solid tumor selectivity 190
3'-Deoxyadenosine (cordycepin)
monophosphate inhibition of PRPP synthetase 169
Deoxycoformycin on DAPdR inhibition of cell growth 134
Deoxycytidine
on DAP inhibition of cell growth 132, 133
on DAPdR inhibition of cell growth 132, 133
Deoxycytidine kinase (EC 2.7.1.74)
DAPdR substrate 125, 136
Deoxyguanosine
from DAPdR 138–141
in combination chemotherapy 138
Deoxyinosine
on DAP inhibition of cell growth 132, 133
on DAPdR inhibition of cell growth 132, 133
Deoxynucleosides on cell cycle progression 130
Deoxynucleotide diphosphates (dNDPs) in replitase complex 114
Deoxynucleotidyltransferase (EC 2.7.7.1)
DAPdR substrate 125
Deoxyribonucleoside triphosphate pools, APP on 195, 196
Dexamethasone
initiation of Ha-*ras* expression 203
resistance, gene methylation and 85
Dextran sulfate on tyrosine hydroxylase activity 100, 102, 105
Diacylglycerol
activation of protein kinase C 204
on inhibition of protein kinase C 206, 207
ras-induced formation 204
Diacylglycerol acyltransferase (EC 2.3.1.20)
assay 36
carbachol on 37, 48
time course 38
isoproterenol on 37, 48
protein kinases on 38–40
after lobule stimulation 41, 42
sequentially 41
protein phosphatases on 39
Diacylglycerol kinase (EC 2.7.1.107)
activation of soluble 47
assay 36
carbachol on 37, 48
time course 38
isoproterenol on 37, 48
protein kinases on 38–40, 47
after lobule stimulation 41, 42
sequentially 41
protein phosphatases on 39, 40
CDP-Diacylglycerol synthetase (EC 2.7.7.41) 37, 40, 48
assay 36
GTP-mediated stimulation 48
2,6-Diaminopurine (2-aminoadenine, DAP) metabolic activation 125–141
growth inhibition by 125
metabolism chart 140
nucleotide analogs from 125
on deoxyribonucleotide pools 138
on L1210 cells
cell cycle 130-132
cytotoxicity 128, 129
growth inhibition
adenine on 132, 133
deoxycytidine on 132, 133

deoxyinosine on 132, 133
proliferation 128, 129
on ribonucleotide pools 136
riboside 5'-monophosphate from 139
riboside 5'-triphosphate from 137
structure 126
2,6-Diaminopurine-2'-deoxyriboside (2-aminodeoxyadenosine, DAPdR)
metabolic activation 125–141
antiproliferative effects 125
DAP riboside 5'-triphosphate from 137
deamination 126
deoxyguanosine from 138–140
DNA incorporation 125
metabolism chart 140
on deoxyribonucleotide pools 138
on dGTP levels 138
on L1210 cells
8-aminoguanosine synergism 134
cell cycle 130–132
coformycin on 134
cytotoxicity 128, 129
growth inhibition
adenine on 132, 133
deoxycytidine on 132, 133
deoxyinosine on 132, 133
proliferation 128, 129
on ribonucleotide pools 136
phosphorylation 125
structure 126
cis-Diamminedichloroplatinum (II)
synergistic action with protein kinase C inhibitors 210–212
5,10-Dideazatetrahydrofolate (DDATHF)
effect on H35 cells with antifolates 16, 19
inhibition of carcinoma and leukemia cell lines 190
inhibition of GAR transformylase 13
solid tumor selectivity 190
Differentiation *see* Cell differentiation
Differentiation factors (DF)
deficiency, passive oncogenesis and 363
interleukins 1–5 362
lymphokines 362
receptors 362
response of ML-1 cells 364, 366
TGF-β 362
therapeutic administration 366
TNF
α-Difluoromethylornithine (DFMO)
inhibition of ODC 81
resistance to 81
at normal enzyme levels 82, 83
cycloheximide and 83
gene methylation and 82
in mouse tumor cells 82
in Sultan myeloma cells 82
Dihydrocompactin, source of 53
Dihydrofolate reductase (EC 1.5.1.3)
increase in CCRF-CEM/E cells 323
inhibition by
DDATHF with antifolates 13–19
F-MTX 9
metoprine 13–19
MTX 7–10, 13, 15
PDDF with antifolates 13–19
TMTX 13–19, 331
Dihydromevinolin, source of 54
Dihydromonacolin L, source of 54
3,4-Dihydroxybenzylamine on tyrosine hydroxylase activity 100
l-3,4-Dihydroxyphenylalanine (L-DOPA)
formation from tyrosine 93
on tyrosine hydroxylase 98
9,10-Dimethyl-1,2-benz(a)anthracene (DMBA)
carcinogenesis, protection against 238
on chromosomes, Sudan III protection 238
Dimethylsulfoxide (DMSO) induction of differentiation 25, 26, 32
Dipeptidyl peptidase IV (DPP IV, EC 3.4.4.15) in liver and hepatoma 253, 266
antibody preparation 254
assay 254
common and different polypeptide fragments 261
distribution of activity 255
cryptic 256
endoplasmic reticulum 257, 263
Golgi apparatus 257, 263
homogenate 257
membrane bound 256
plasma membrane 257, 263, 264, 266
soluble 256, 264, 266
epitopes 263–266
histochemical localization 264, 265
immunohistochemistry 255, 264

isoelectric points 260
molecular weights 260
monoclonal antibodies 264, 266
peptide mapping 254
post-processing 266
properties 253
release from plasma membranes 261, 262
surface activity comparison 259
Diphenols, induction of phase II enzymes 242
1,2-Dithiol-3-thiones
anticarcinogenic properties 238
phase II enzyme activation 239, 241
DNA polymerase (EC 2.7.7.7)
α
assay 27
distribution between nucleus and cytosol 119
in 3T3 nuclei 30, 31
β
assay 27
in 3T3 nuclei 30, 31
POL I Klenow, DAPdRTP substrate 125
DNA-specific antitumor agents on ML-1 cells differentiation 366
DNA synthesis in L1210 cells
DAP on 135
DAPdR on 135
DOPAC on tyrosine hydroxylase 98
Dopamine (DA)
formation from tyrosine 93
on tyrosine hydroxylase activity 95–99
features of inactivation 99, 100
DOPEG on tyrosine hydroxylase 98

Ectoenzymes in leukotriene metabolism 308, 310, 316
Ectopic hormones, cell immaturity markers 363
Endoplasmic reticulum
DPP IV in 257
DPP IV precipitation from 263
Enzymes, anticarcinogenic
Phase I (bifunctional)
anticarcinogenic activities 239
inducers of 239
induction mechanism 240
Phase II (monofunctional)
anticarcinogenic activities 239
inducers of 239
inducing species, Michael reaction acceptor and 243
induction mechanism 240
Epidermal growth factor (EGF)
erb B oncogene homology 360, 361
+ insulin on cellular PRPP 158
furosemide on 159
magnesium requirement 160, 161
on DNA synthesis 153
on ribosyl-^{14}C labeling of nucleotides 153
synergism with insulin 153–157
on tyrosine kinases 360
Epinephrine
formation from tyrosine 93
on tyrosine hydroxylase 98
Epstatin *see* Pravastatin
Erb-A1 oncogene *see* Oncogene
Erythro-9-(2-hydroxy-3-nonyl)adenine (EHNA) inhibition of adenosine deaminase 139
Escherichia coli
PRPP synthetase from 147
ribonucleotide reductase holoenzyme 113
Ethanol inhibition of oxidative leukotriene catabolism 314–317
Ethoxyquin anticarcinogenic action 238
Ethylene bis(oxyethylene-nitrilo)tetraacetate (EGTA) on nucleotide syntheses 159
Evolution of proteins 221–235
Exocyclic amino ribonucleosides
anomerization 167
as substrates for adenosine kinase 167, 168
structures 167, 168

α-Fetoglobulin, cell immaturity marker 363
Fibroblast growth factor
on human fibroblasts 156
on mouse 3T3 cells 158, 163
on mouse 3T6 cells 156
Flavonoids
anticarcinogenic properties 238

phase II enzyme activation 241
Fluoresein-methotrexate (F-MTX)
activation 9
isomers 9
properties 9
Folate
degradation by CPG_2 323, 325–327, 332
pools
antifolate activity and 13, 15, 18, 19
assay 14
Folate transport protein
of *L. casei* 4
antibody 5, 7
E.M. visualization 6
Western blot detection 5
of L1210 cells 3, 4, 7
E.M. visualization 9
F-MTX labeling 9
MTX labeling 7, 8
Fructose-1,6-biphosphatase (FBPase-1, EC 3.1.3.11) in yeast, regulation 283
Fructose-2,6-biphosphatase (FBPase-2, EC 3.1.3.46)
from yeast 283–304
activity during growth 288, 301, 304
assay 285
chromatography 290–292
inactivation by protein kinase 295
kinetics 284, 299–301
[Fru 6-P] on 300, 301, 304
[Fru 2,6-P] on 300, 304
[*Sn*-glycerol 3-phosphate] on 300, 301
purification 290–293, 302, 304
reactivation by protein phosphatase 2A 295, 296, 301
specificity 294, 295
in liver 283, 299, 303
in *Trypanosoma brucei* 303
Fructose 1,6-biphosphate (Fru 1,6-P_2) on FBPase-1 activity 284
Fructose 2,6-biphosphate (Fru 2,6-P_2)
in liver activation of PFK-1 283
in yeast
degradation 284, 286, 304
pH dependence 287–289, 302
on FBPase-2 300
preparation 284, 285
regulation of PFK-1 and FBPase-1 283, 303
Fructose 6-phosphate (Fru 6-P)
from Fru 2,6-P_2 295
on FBPase-2 activity 300, 301
on PFK activity 296, 298, 302
Fungal alcohol dehydrogenases 225–229
conserved residues 231–233
variable residues 234
Fumarates induction of quinone reductase 245–247
Furosemide inhibition of mitogen-stimulated PRPP and nucleotide syntheses 159, 163

Gene amplification
N-*myc* in human tumors 83
on oncogene activation 361
ornithine decarboxylase inhibitors and 81
in Sultan myeloma cells 82
Gene methylation
DFMO on 82
in human lymphatic leukemia 85
ornithine decarboxylase 84, 85
Glucagon on HMG CoA reductase 65, 66, 73
phosphorylation 66
Glucocorticoid resistance, ODC activity and 84, 85
Glutamate-oxaloacetate transaminase (EC 2.6.1.1), malate oxidation and 273, 276
γ-Glutamyltransferase (EC 2.3.2.2)
conversion of LTC_4 308
Gutathione S-transferase (EC 2.5.1.18)
anticarcinogenic action 239, 247
induction 240, 242, 243
Glycerol kinase (EC 2.7.1.30)
assay 36
in lipid metabolism 37, 40, 48
Glycerolphosphate acyltransferase (EC 2.3.1.51)
assay 36
in lipid metabolism 37, 40, 48
sn-Glycerol 3-phosphate on yeast PFK activity 298, 299, 304
Glycineamide ribonucleotide (GAR) transformylase (EC 2.1.2.2)
inhibition by DDATHF 13
Glycolytic enzymes structure prediction

224
GMP synthase (EC 6.3.4.1) increase in neoplastic cells 337, 338
Golgi apparatus
DPP IV in 257
DPP IV precipitation from 263
Growth factors (GF)
activation of receptor-linked transduction system 360
antibodies 365
EGF on tyrosine phosphokinases 360
modification on neoplastic cell growth 365
PDGF sequence of events 360
specificity 360
GTP
as measurable differentiation indicator 352, 353
biosynthesis, IMPDH control 335, 337
concentration in human leukemia, tiazofurin on 346, 347
in rat hepatoma 3924A, tiazofurin on 337
reduction after tiazofurin 339
salvage biosynthesis in tumors 337
Guanine nucleotides synthesis stimulation by EGF + insulin 157
Mg^{2+} on 161
Guanine phosphoribosyltransferase (GPRT, EC 2.4.2.8)
cancer chemotherapy target 337
high activity in neoplastic cells 338
inhibition by hypoxanthine 340, 341
Guanine salvage in cancer cells, hypoxanthine inhibition 340, 341, 354
Guanosine
induced inhibition of differentiation 352
on tiazofurin and retinoic acid induced differentiation 345, 354
Guanylates role in neoplasia 338, 354
Guinea pig parotid gland lobules
diacylglycerol metabolism in 35
enzymes of 36

Ha-*ras*-oncogenes *see* Oncogenes
Hamster
BHK-21 cells insulin on lipid phosphorylation 32
BHK-21/C13 cells ribonucleotide reductase subunit formation 114
90KDa M1 subunit control 117
CHO cells
HMG CoA reductase amino acid sequence 70
ribonucleotide reductase activities 115, 116
transfer of human ODC gene into 86, 87
morphology and 87
CHO-K1 cells
culture 187
proliferating and plateau phase, APP and 6-thioguanine on 191
reversal of MRPP inhibition 177, 178
Heparin on tyrosine hydroxylase activity 100, 101, 103
Hepatic leukotriene metabolism 309, 311–314
Hepatorenal syndrome LTE_4 renal excretion in 311
Hexadecyl-mercapto-2-methoxy-methyl-propyl-1-phosphocholine (BM41440)
antitumor activity 205
inhibition of protein kinase C 205–207, 208, 209, 213
on cell proliferation 209, 213
synergy with *cis*-DPP 210, 211
Hexokinases, embryonic-type, cell immaturity and 363
Horse liver alcohol dehydrogenases, analysis of sequences 225–229
Human
alcohol dehydrogenases, analysis of sequences 225–229
erythrocytes, PRPP synthetase from 147
fetal adrenal HMG CoA reductase amino acid sequence 70
fetal fibroblast cells
bombesin + insulin on 156
culture 149
fibroblast growth factor on 156
melittin + insulin on 156
serum on 158, 163
HCT-8 cells
APP and APP-MP on 189
hepatomas, serum DPP IV activities in 253

HL60 cells
APP and APP-MP on 189
culture 187, 335, 336
differentiation, retinoic acid and tiazofurin on 342–345, 354
drug treatment 336
measurement of cell differentiation 336
measurement of hypoxanthine on guanine incorporation 336
proliferation, retinoic acid and tiazofurin on 341–345, 354
immunodeficiency virus (HIV), 3'-deoxyDAPdR on 126
K562 cells
differentiation induction, markers of 352
tiazofurin induced differentiation in 341, 352, 354
tiazofurin inhibition of IMP DH 341, 351
tiazofurin reduced *ras* oncogene 341, 351
large cell lung carcinoma (LXFG), synergistic action of quercetin and *cis*-DDP on 210–212
leukemia
DAP treatment 125
leukocytes, TAD accumulation 339
TAD inhibition of blast cell IMPDH 339
tiazofurin-allopurinol combination on 348–350
tiazofurin induced cell differentiation 335, 348, 350–352
leukemic leukocytes, hypoxanthine on guanylates in 340, 341
leukemic lymphocytes, deoxynucleosides on cell cycle 130
liver cirrhosis
ethanol on leukotriene oxidation and 315, 317
LTE_4 renal excretion in 311
lymphatic leukemia, ODC gene hypomethylation in 85
lymphatic leukemia cells (Ball) ODC gene hypomethylation in 85
lymphoblast CCRF-CEM cell lines, TMTX + CPG_2 on 323–332
combination index for drug interaction 325, 329, 330
CPG_2 survival curves and ED_{50} 328, 329
culture 324
MTT colorimetric assay 324
TMTX + CPG_2 synergistic action 329–331
TMTX survival curves and ED_{50} 326–328
lymphoblast CCRF-CEM/E (CCRF-CEM/R_1) cells, MTX resistance, increased DHFR and 323
lymphoblast CCRF-CEM/P (CCRF-CEM3/7) cells
folate polyglutamate reduction in 331
MTX resistance, impaired polyglutamylation and 323
lymphoblast CCRF-CEM/T (CCRF-CEM/R_2) cells
MTX resistance, uptake impairment and 323
lymphoblast CCRF-MEM cells, APP and APP-MP on 189
lymphoblast cell cycle, deoxynucleoside analogs on 131
lymphoma Molt-4F cells ribonucleotide reductase 115
MCF-7 cells
APP and APP-MP on 189
culture 187
myeloblastic leukemia ML-1 cells
differentiation induced by DNA-specific agents 366
high growth-rate clones 364
maturation with additional DF 363
myb product transcription rate and 364
system for differentiation and growth control studies 359, 363
myeloma cells (Fravel) resistance to DFMO 82, 83
myeloma Sultan cells
DFMO resistance 82
gene amplification study 83
ODC sequences
amplification 82
gene structure 86
gene transfer to CHO cells 86, 87
hypomethylation and dexamethasone resistance 85
hypomethylation and glucocorticoid

resistance 84, 85
methylation 84
pheochromocytoma tyrosine hydroxylase activity
pH on 105
polyanions on 104, 105
protein kinases on 104, 105
tyrosine hydroxylase
amino acid sequences 104, 105
regulation 104–106
WI-12 cells
ARPP (APP)
cytotoxicity 171, 189
on *de novo* nucleotide synthesis 174, 179
on dNTP pools 195
on PRPP synthesis 177
on ribonucleotide levels 173, 193–195, 197
ARPP-MP (APP-MP) cytotoxicity 189
culture 187
extract, MRPP inhibition of adenosine phosphorylation 172
MRPP
cytotoxicity 171, 173
on PRPP synthesis 177
on ribonucleotide levels 173
pyrazofurin resistant, ARPP on 195
Hydrocarbons (polycyclic aromatic) activation of cytochrome P-450 239
7-Hydroxyguanine inhibition of carcinoma and leukemia cell lines 190
3-Hydroxy-3-methylglutaryl coenzyme A reductase (HMG CoA reductase, mevalonate: NADP+ oxidoreductase CoA-acylating, EC 1.1.1.34)
activity induction 57, 58, 60
antibody 68
ATP on 72, 73
calpain cleavage 67, 69, 70
catalytic site 65
chimeric enzyme 72
cholesterol formation, control of 73
cholesterol on 65, 66, 71, 72
LDL-cholesterol reduction and 59
chymotrypsin cleavage 71
dephosphorylation 66
feedback regulation 65, 66
half-life 70
homology in amino acid sequences 70
inhibition by compactin analogs 56
inhibition mechanism 55
inhibitors
chemical synthesis 55
isolation and synthesis 53
structure–activity relationship 55, 56
PEST regions 70, 71, 73
phosphorylation
agents 65, 66
degradation and 65–74
sites 69, 70
properties 65, 73
protease on 72
proteolytic product 70
reaction 54
rhodopsin similarity 72
soluble fragments 68
transmembrane segments 71, 72
3-Hydroxy-3-methylglutaryl CoA synthase (EC 4.1.3.5) induction by mevinolin 58
Hypercholesterolemia 53
LDL-cholesterol levels and 59
Hypoxanthine
plasma level increase by allopurinol 348–350
protection against antifolate combinations 16
Hypoxanthine (guanine) phosphoribosyltransferase, (EC 2.4.2.8)
deficient WI-L2 cells 177
inhibition by hypoxanthine 340, 341
MRPP on 175, 176
PRPP substrate 170
purification 188

IMP dehydrogenase (IMP DH, EC 1.1.1.205)
cancer chemotherapy target 337
increase in myelocytic leukemia cells 339
increase in neoplastic cells 337, 338
inhibition by tiazofurin 335–354
in human leukemias 346, 347
in rat 3924A hepatomas 337
on GTP concentration 346, 348
inhibition kinetics, by NADH 339

inhibition kinetics, by TAD 339
$t_{1/2}$ in blast cells from tiazofurin in leukemic patients 340
Indoles, anticarcinogenic properties 238
Inosine, ribosyl-^{14}C *see* [Ribosyl-^{14}C]inosine
Inositol 1,4,5-triphosphate (IP3) second messenger role 360
Insulin
+ EGF on cellular PRPP 158
on HMG CoA reductase 65, 66, 73
on ribosyl-^{14}C labeling of nucleotides 153–157
synergism with EGF 153–157
Insulin-like growth factor-I (IGF-I)
on DNA polymerases 28, 30, 31
on Friend cells 27–29
on lipid phosphorylation 29, 30
on 3T3 cells 26–30
Interferon see Lymphokines
Interleukins 1–5, cell differentiation and 362
Ionophore A23187 stimulation of PRPP and nucleotide synthesis 159, 163
Isoproterenol (β-adrenergic agonist)
acyl transfer and 46
on DAG-acyltransferase activity 37
on DAG-kinase activity 37
on diacylglycerols 35, 45
on lyso-PA-acyltransferase activity 37
on parotid gland lobules 35, 42, 49
Isothiocyanates
anticarcinogenic properties 238
phase II enzyme activation 239, 241
Itocanates induction of quinone reductase 245, 246

Krebs cycle succinate dehydrogenase in 271, 276, 278

Lactobacillus casei
folate transport protein 4
antibody 5, 7
E.M. visualization 6
Western blot detection 5
spheroplasts 7
Lactones
anticarcinogenic properties 238
phase II enzyme activation 241, 243, 244
Leukotriene B_4 (LTB_4) 307
ω-oxidative degradation inhibition by ethanol 314–316
Leukotriene C_4 (LTC_4, cysteinyl)
catabolism pathway 308, 314
conversion to LTD_4 and LTE_4 in circulating blood 307, 311
deactivation in circulating blood 310
half-life 310
ω-oxidized metabolites 311
Leukotriene D_4 (LTD_4, cysteinyl)
elimination from circulating blood 307, 316
half-life 310
Leukotriene D_4-dipeptidase (EC 3.4.13.11) in catabolic pathway 308
Leukotriene E_4 (LTE_4, cysteinyl)
elimination from circulating blood 307
half life 310
N-acetylation 307
renal excretion in liver disease 311
ω-carboxylated 311
ω-hydroxylated 311
ω-oxidation 307, 308, 311
ethanol inhibition 314, 315
N-acetyl-Leukotriene E_4 (LTE_4NAc, cysteinyl)
β-oxidation products 312
elimination from circulating blood, half-life 310
ω-oxidation 308
ω-oxidated metabolites 311–314
Leukotrienes, metabolic inactivation 307–317
chromatographic separation 310
elimination from blood circulation 309
^{3}H labeled 309
hepatobiliary elimination 309
intracellular metabolic deactivation 309
pathological conditions for enhanced production 307
relative biological potencies 309
renal excretion 309
ω-oxidation 309
clofibrate induction 313
ethanol inhibition 314–316
ω-oxidized in bile and urine 311
Lipid metabolism in secretory cells 35–49

Lipocortin 1 41, 44
Lipocortin 2
  interaction with PI 45, 46
  on phospholipase A2 43
  on phospholipase C 44, 45
Lipocortins
  inhibitory properties 48, 49
  on phospholipase C 41, 43–46
Lipomodulin on phospholipase A2 41, 44
Low density lipoprotein control by compactin and analogs 59, 60
Lymphokines, cell differentiation and 362
Lysophosphatidate acyltransferase (EC 2.3.1.51)
  assay 36
  carbachol on 37, 48
    time course 38
  isoproterenol on 37, 48
  protein kinases on 38–40
    after stimulation of lobules 41, 42
    sequentially 41
  protein phosphatases on 39, 40

Magnesium ion (Mg^{2+})
  cell proliferative states and 162
  concentration effects on PFK-2 activity 296–298, 302, 303
  requirement
    by amidophosphoribosyltransferase 161
    by carbamoyl-phosphate synthetase 161
    by protein kinases 161
    for mitogenic stimulation of PRPP and nucleotide syntheses 160, 161, 163
Maize alcohol dehydrogenases analysis of sequences 225–229
Malate oxidation by succinate-ubiquinone reductase 271–275
  D and L differences 273, 274
  kinetic model 275
  kinetic parameters 274
Maleates induction of quinone reductase 245, 246
Melittin + insulin
  on human fibroblasts 156
  on mouse 3T3 cells 158, 163
  on mouse 3T6 cells 156
6-Mercaptopurine inhibition of carcinoma and leukemia cell lines 190
Methionine synthetase in folate metabolism scheme 15
Methotrexate (MTX)
  activation 7
  chemotherapy 3, 10
  fluorescein derivative (F-MTX) 9
  labeling of folate transport protein 7, 8
  on DHR 13, 15
  on ribonucleotide pools 197
  resistant cells 3, 10, 323
  transport into cells 3
4-Methoxy-8-[β-d-ribofuranosylamino[pyrimido[5,4-d]pyrimidine (MRPP)
  anomerization 171
  as substrate for adenosine deaminase 171
  chemotherapy 169, 179
  cytotoxicity in culture 171
  cytotoxicity reversal by nucleosides 177
  inhibition of adenosine kinase 172
  inhibition of PRPP synthetase 168–179
  monophosphate on PRPP synthetase 178
  on cell nucleotide content 172, 173
  on L1210 leukemia in mice 169
  on PRPP levels 176
  on PRPP synthesis 177
  structure 168
3-Methylcholanthrene protection against azo dye carcinogenesis 237
5,10-Methylenetetrahydrofolate PDDF competition 14, 18
Methylenetetrahydrofolate reductase (EC 1.5.1.20) in folate metabolism scheme 15
6-Methylthio-9-(β-D-ribofuranosyl)purine (methylthioinosine, MMPR)
  inhibition of carcinoma and leukemia cell lines 190
  inhibition of PRPP synthetase 169
Metoprine
  combination with DDATHF 16
  combination with PDDF 16–18
  on DHFR 13, 15
  on PDDF, cellular folate ratio 19
Mevalonate
  levels, compactin and analogs on 56, 57
  on HMG CoA reductase 65, 66, 72

Mevinolin *see* Monacolin K
Michael reaction 243
  acceptor, requirement for phase II enzyme induction 243–247
Microsomal ω-hydroxylase induction by clofibrate 314
Microsomes HMG CoA reductase from 67–73
Mitogenic stimulation of quiescent cells 149, 153–163
Monacolin J
  source of 54
  structure 54
    activity and 56
Monacolin K (Mevinolin)
  clinical studies 55, 57
  induction of HMG CoA reductase 57, 58, 60
  on cholesterol levels 58
  sources of 53, 54
  structure 54
    activity and 55
Monacolin L 54
  structure, activity and 56
Monacolin M 54
Monacolin X 54
Monascus ruber production of monacolin K and analogs 53, 54
Mouse
  alcohol dehydrogenase, analysis of sequence 225–229
  B16 cells
    APP and APP-MP on 189
    culture 187
  C57B16J liver, Ah receptor level and enzyme induction 240
  colon carcinoma 26 cells
    APP and APP-MP on 189
    culture 187
  DBA/2J liver, Ah receptor level and enzyme induction 240
  Ehrlich ascites cells
    DFMO induced ODC amplification in 82
      on growth potential 87, 88
    ribonucleotide reductase subunit formation 114
      90kDa M1 subunit control 117
      site specificity and 118
  Friend cell
    culture 26
    differentiation 25
      phosphorylation and 32
    nuclear phosphorylation of lipids in 28, 29, 32
    nuclear preparations 27
    unidentified lipid 28
Hepa 1c1c7 cells
  Ah⁻ lines 241
  model system for anticarcinogen studies 240, 241
  quinone reductase induction in 242–247
L cells ribonucleotide reductase activities 115, 116
L1210 leukemia
  APP (ARPP) chemotherapy 168, 169, 187, 188, 198
  MRPP chemotherapy 168, 169
L1210 leukemia cells
  PP (ARPP) cytotoxicity 171, 189
  APP-MP cytotoxicity 189
  APP on cell cycle phase distribution 191–193
  APP on dNTP pools 195
  APP on nucleic acid synthesis 196, 197
  cell cycle studies 127
  culture 127, 187
  DAP and DAPdR cytotoxocity 128, 129
  DAP and DAPdR growth inhibition 128, 129
    8-aminoguanosine on 134, 135
    deoxycoformycin on 134
    nucleosides and bases on 132, 133
  DAP and DAPdR induced cell cycle changes 130, 131
  DAP and DAPdR on nucleic acid synthesis 135
  DAP and DAPdR on nucleotide pools 136, 138
  DAP and DAPdR toxicity differences 140, 141
  folate transport deficient subline 8
  folate transport protein 7
    E.M. visualization 9
    MTX labeling 7, 8
    F-MTX labeling 9
  folate transport system 3, 4

MRPP cytotoxicity 171
ornithine decarboxylase overproduction in 82
ribonucleotide reductase subunit formation 114
leukemia DAP treatment 125
liver PRPP levels in 147, 162
mammary carcinoma 16/c, APP chemotherapy 187, 188, 198
myeloma cells DFMO resistant 82
P388 cells
APP and APP-MP on 189
culture 187
P388/ADR cells APP on 192, 193
S49T lymphoma cells ribonucleotide reductase subunit formation 114
M1 antigenic sites 116
M1 production in 117
TA3 mammary cells ribonucleotide reductase subunit formation 114
3T3 fibroblast cells
bombesin + IGF-I treatment of 28, 30
culture 26, 149
DNA polymerase activities in 28, 31
Ha-*ras* transfection 203
on phorbol ester binding 204
on phosphatidic acid formation 203, 204
nuclear phosphorylation of lipids in 30
nuclear p-inositide metabolism 26
nuclear preparations 28
PRPP, studies in 148–163
bombesin + insulin on 158
EGF + insulin on 153, 158
melittin + insulin on 158
Mg^{2+} on stimulated nucleotide labeling 160, 161
mitogen induced DNA synthesis 156
ribose incorporation into nucleotides 152, 153
ribonucleotide reductase subunit formation 114
3T6 cells
bombesin + insulin on 156
culture 149
fibroblast growth factor on 156
melittin + insulin on 156
PRPP studies 148, 162
serum on 158, 163
Myelodysplastic syndrome, DF deficiency and 363

NADH inhibition of IMP DH 339
β-Naphthoflavone activation of cytochrome P-450 239
Neurotransmitters, catecholamines as 93
Nicotinamide phosphoribosyltransferase (nicotinamide:pyrophosphate phosphoribosyltransferase, EC 2.4.2.12)
MRPP on 175, 176
PRPP substrate 170
Nitrogen mustard (HN2) synergistic action with protein kinase C inhibitors 211, 212
N-Nitrosomethyl urea on ML-1 cells 364
Norepinephrine (NE)
formation from tyrosine 93
on tyrosine hydroxylase 98
5'-Nucleotidase (EC 3.1.3.5) 150
Nucleotide
diphosphates (NDPs)
ribonucleotide reductase M1 catalytic sites 114
separation of 115
metabolism, central role of PRPP 186
synthesis in 3T3 cells, growth factor stimulation 147–163

1-Octadecyl-2-methyl-*sn*-glycero-3-phosphocholine (ET-18-OCH_3)
inhibition of protein kinase C 206–208, 213
on cell proliferation 209, 213
synergy with *cis*-DPP 210
Oncogene
erb A1 sequences, hypomethylation 85
myb in ML-1 cells 364
c-*myc* role in malignancy 341
N-*myc* amplification in human tumors 83
ras
in erythroleukemia cells 338, 351
GTP on expression 353
tiazofurin reduced expression 338, 341, 345, 351, 352, 354

Ha-*ras*
constructs 201, 202
expression by dexamethasone 203
on phorbol ester binding 204
transfected 3T3 cells 203
Oncogenes, characteristics of
activation, genetic causes 361
anti-oncogene and 362
cell-cycle dependent 361
expression during differentation 362
induction after growth stimulation 360
overexpression, transformed cell growth and 361
Orotate phosphoribosyltransferase (orotidine-5'-phosphate:pyrophosphate phosphoribosyltransferase, EC 2.4.2.10)
MRPP on 175, 176
PRPP substrate 170
Ornithine decarboxylase (ODC, EC 4.1.1.17) molecular genetics in human tumor cells 81–88
gene
homology 86, 88
hypomethylation in human leukemia 85, 88
methylation 84–86
sequences
association with ribonucleotide reductase 83, 84
hypomethylation 82, 84, 85
on human chromosome 2 83, 88
on human chromosome 7 84
structure 86
transfer to CHO cells 86, 87
AdoMet DC activity and 87
cell morphology and 87
overproduction
at normal gene dosage 82
gene amplification and 81, 82, 87, 88
on cell growth potential 87, 88
target in hyperproliferative disorders 81
transforming protein and 87
Oxaloacetate decarboxylase (EC 4.1.1.3) 276
Oxaloacetate keto-enol tautomerase (OAT, EC 5.3.2.2)
assay 272
isolation from mitochondrial matrix 276
OAT-1 properties 277
OAT-2 properties 277
comparison with aconitase 277, 278
Oxaloacetate tautomerization 271–279
inhibition of succinate dehydrogenase and 271, 272
models for 275
Krebs cycle and 278
rate 275
β-Oxidation of leukotrienes 307, 308, 312
ω-Oxidation of leukotrienes 307, 308, 311, 312, 317
clofibrate on 313, 314
ethanol on 314

Papain release of DPP IV 262, 266
Pea alcohol dehydrogenase, analysis of sequence 225–229
Penicillium brevicompactum production of compactin 53
Penicillium citrinin production of compactin and analogs 53
Penicillium cyclopium production of compactin 53
Pentastatin + adenine + uridine, protection from APP 193, 194
Peptide folding, solubility and 220, 221
Peroxisomes on leukotriene ω-oxidation 313, 314, 317
PEST regions of HMG CoA reductase 70, 71, 73
Phenolic antioxidants
anticarcinogenic properties 238
enzyme stimulation by 241
1-(4-Phenylazo-phenylazo)-2-naphthol (Sudan III)
activation of phase II enzymes 241
chemoprotection 238
induction of quinone reductase 238
Phenylenediamines induction of phase II enzymes 243
Phosphatidate phosphohydrolase (EC 3.1.3.4)
assay 36
carbachol on 38
distribution between membrane and cytosol 47, 48
isoproterenol on 38
Phosphatidic acid (PA)

in Friend cells 28, 29
in 3T3 cell nuclei 30, 32
Phosphatidylinositol (PI)
interaction with lipocortin 2 45, 46
on lipocortin 2 inhibition of phospholipase C 44, 45
Phosphatidylinositol-4-phosphate (PIP)
in Friend cells 28, 29
in 3T3 cell nuclei 30, 32
levels, differentiation and 25
Phosphatidylinositol-4,5-(bi)phosphate (PIP2)
in Friend cells 28, 29, 32
in 3T3 cell nuclei 30, 32
levels, differentiation and 25
PDGF stimulated hydrolysis of 360
phospholipase C inhibition and 44, 45
Phosphatidylserine on inhibition of protein kinase C by BM 41440 206–208
Phosphodiesterase (venom exonuclease EC 3.1.15.1) 150
Phosphoenolpyruvate on yeast PFK activity 258, 292, 304
6-Phosphofructo-1-kinase (PFK-1, EC 2.7.1.11)
activation in liver 283
in yeast
regulation 283
synergistic activation 283, 284
6-Phosphofructo-2-kinase (PFK-2, EC 2.7.1.105)
from yeast 283-304
activation by cAMP phosphorylation 284
activity 286
during growth 288, 289, 301, 304
assay 285
chromatography 290–293, 295, 302
inhibition by ATP 286, 296
kinetics 296–299
[ATP] on 296, 297, 304
[Fru 6-P] on 296, 298, 299, 302
[*sn*-glycerol-3-phosphate] on 298, 299
[Mg^{2+}] on 296–298, 302, 303
[phosphoenolpyruvate] on 298, 299
molecular weight 302
purification 290–293, 302, 304
in liver 283, 296, 303
Phosphoinositide hydrolysis, mitogen induced 156
Phospholipase A2 (EC 3.1.1.4)
p-bromophenacyl bromide stimulation 162
inhibition, substrate and 48
lipocortin 2 on 43
lipomodulin control 41, 44
Phospholipase C (EC 3.1.4.11)
activation 35
assay 37
1,2-*sn*-diacylglycerols and 45
lipocortin 2 on 43–45
lipocortins on 41
ras-induced activation 203
release of bound DPP IV activity 261, 262
treatment of plasma membranes 254
Phospholipids on chromatin 25
Phosphoribosylamine synthetase (EC 2.4.2.14) *see* Amidophosphoribosyl transferase
5-Phosphoribosyl-1-pyrophosphate (PRPP)
assay 188
availability, ARPP and MRPP on 175–179
cellular content EGF + insulin on 158
colchicine on 162
cultured cell studies 148
cycloheximide on 162
elevated pool in tumor cells 185
flux stimulation by EGF + insulin 154, 155
in nucleotide biosynthesis 169–179, 185, 186
levels, ARPP (APP) and MRPP on 176, 197
regulation of
amidophosphoribosyltransferase 147, 170
carbamoyl-phosphate synthetase 147, 170
[ribosyl-^{14}C]inosine as flux tracer 151, 152
separation 150
subunit isoforms 148
synthesis and metabolic flux through 147–163
synthesis ARPP and MRPP on 177
5-Phosphoribosyl-1-pyrophosphate

(PRPP) synthetase (ATP:D-ribose-5-phosphate pyrophosphotransferase, EC 2.7.6.1)
activity in tumor cells 168
assay 188
central role in nucleotide biosynthesis 169, 170
EGF + insulin on 153, 158
genetic loci 170
inhibition 167–179
by ARPP (APP) 168, 169, 185
by ARPP-MP (APP-MP) 197
by 3'-deoxyadenosine 169
by MMPR 169
by MRPP 168, 169
by MRPP monophosphate 178
Pi requirement 179
reaction catalyzed 151
sources and regulation of 147
Phosphoribosyltransferase, DAP substrate comparison 140
Phosphorylation of HMG CoA reductase 65–74
serine sites 70, 71, 73
cAMP-dependent Phosphorylation
inactivation of FBPase-2 and 296, 303
regulation of PFK-2 and FBPase-2 283, 284, 303
Plasma membrane DPP IV 257
anchorage in liver and hepatoma 261, 262
antiserum recognition 263
precipitation from 263, 264
Platelet derived growth factor (PDGF)
mode of action 360
sis-oncogene homology 360, 361
Point mutations on oncogene activation 361
Polyanions on tyrosine hydroxylase activity 100-106
Polyphosphoinositides (p-inositides)
metabolism and cell differentiation 25–32
phosphorylation assay 26, 27
Pravastatin CS-514 (Epstatin, 3β-hydroxycompactin Na^+)
clinical studies 55
on cholesterol levels 58, 60
structure 54
activity and 55
10-Propargyl-5,8-dideazafolic acid (PDDF)
cellular accumulation 14
competition with 5,10-methylenetetrahydrofolate 14
effect on H35 cells with antifolates 16–19
inhibition of thymidylate synthase 13
potentiation by DHFR inhibitors 17
Protein kinase C (ATP:protein transphosphorylase, PKC, EC 2.7.1.37)
activation
by diacylglycerol 204, 205, 360
by TPA 360
in *ras*-transformed cells 203
as chemotherapy target 201–213
calpain cleavage of 71
in cell nucleus 25
intracellular signalling and 31
in cellular replication 201
inhibition
by BM1440 205–209
by ET-18-OCH3 206–209
by quercetin 208, 209
by staurosporine 208, 209
by tamoxifen 208, 209
in vivo 208, 209
on tyrosine hydroxylase activity 93, 101
phosphorylation of HMG CoA reductase 66, 71
purification 94
calmodulin-dependent Protein kinase
on DAG acyltransferase activation 38, 39, 41, 42
on DAG kinase activation 38, 39, 41, 42, 47
on lyso-PA-acyltransferase activation 38, 39, 41, 42
on tyrosine phosphorylase activity 93, 100–107
phosphorylation of HMG CoA reductase 66, 71
protein phosphorylation and 46, 49
purification 37, 94
cAMP-dependent Protein kinase
catalytic subunit
on DAG acyltransferase activation 38, 39, 41, 42
on DAG kinase activation 38, 39, 41,

42, 47
on lyso-PA-acyltransferase activation 38, 39, 41, 42
purification 37
2,3-*sn*-diacylglycerols and 45
inactivation of FBPase-2 295, 296
on tyrosine phosphorylation and 46, 49
purification 94
Protein phosphatase 1
on activated lyso-PA acyltransferase 39, 40
on activated DAG kinase 39, 40
Protein phosphatase 2A
on activated DAG acyltransferase 39
on activated DAG kinase 39, 40
on activated lyso-PA acyltransferase 39, 40
purification 37
reactivation of FBPase-2 295, 296, 304
Protein phosphatase 2B
on activated DAG kinase 40
on activated lyso-PA acyltransferase 40
purification 37
Protein phosphatases inhibition by mevalonate 66
Protein phosphorylation, parotid gland enzyme activation and 38–41
Protein S6 phosphorylation 202
as *in vivo* marker for PKC 208
BM41440 inhibition 208
TPA activation 208
Protein S6 kinase PKC control of 208
Protein structure *see also* Alcohol dehydrogenases
adaptive traits 221-223
conditions for helix formation 221
homologous sequences
information from 223
neutral variation reactive center 224
neutral drift 221–223
prediction 219, 220
stability, natural selection and 222
Protocatechuic acid on tyrosine hydroxylase activity 100
Pseudomonas strain RS-16, carboxypeptidase G_2 from 323, 324
Purine antagonists inhibition of carcinoma and leukemia cell lines 190
Purine nucleoside phosphorylase (EC 2.4.2.1) 148
DAP substrate comparison 140
in DAPdR action 134, 140
Purine ribonucleotide pools, effect of APP on 193, 196, 197
Putrescine, ornithine decarboxylase control of 81
Pyran analogs induction of quinone reductase 243, 244
Pyrimidine ribonucleotide pools, effect of APP on 193, 197
Pyrocatechol on tyrosine hydroxylase activity 100
Pyrophosphate:Fru 6-phosphotransferase in FBPase assay 294

Quail tyrosine hydroxylase phosphorylation sites 104, 105
Quaternary structure in proteins
conserved residues and 233, 234
evolutionary divergence and 231
mammalian, fungal differences 233
yeast, Adh predictions 231, 233–235
Quercetin
inhibition of cell proliferation 208, 209, 213
synergy with *cis*-DPP 210–212
synergy with HN2 211
inhibition of PKC 208, 209, 213
Quinone reductase [NAD(P)H:(quinone acceptor) oxidoreductase, EC 1.6.99.2)] (DT-diaphorase, menadione reductase)
as marker for anticarcinogenic activity 241
assay 241
induction
by acrylate, crotonate and cinnamate analogs 244, 245
by chemoprotectors 238
by coumarin and pyran analogs 242–244
by unsaturated decarboxylic acids 245–247
in Hepa 1c1c7 cell system 241–243
mechanism, Ah receptor and 240
protection against quinones and precursors 239
Quinones induction of phase II enzymes 243

Rat
alcohol dehydrogenase, analysis of sequence 225–229
bile LTE_4 NAc metabolism products 309, 312
clofibrate pretreatment 313, 314
blood LTC_4 metabolism rates 311, 316
brain tyrosine hydroxylase activity in 95, 100
polyanions and protein kinases on 101–104
connective tissue DPP IV in 265
hepatocytes LTB_4 degradation, ethanol inhibition 316, 317
hepatoma cells, ectoenzyme deactivation of leukotrienes 310
hepatoma 3924A cells
culture and characteristics 335
IMP DH inhibition by TAD 339
synergistic action of tiazofurin and retinoic acid on 345, 346, 354
tiazofurin on 337, 338
hepatoma H35
antifolate combination cytotoxicity 16, 18
protection 16
culture 14
hepatoma Morris 7777, DPP IV
activity distribution in 255–258
transport significance 258
anchorage to plasma membrane 261, 262
antiserum, precipitation of 264
biochemical properties 260
polypeptide fragments 261
surface activity comparisons 259, 266
in adherent and non-adherent lines 259
hepatoma 5123tc cells ribonucleotide reductase subunits 117
intestine DPP IV in 265
kidney, transformed NRK cells ribonucleotide reductase M1 subunit location in 119
liver
acylaminoacylpeptidase in 255
DPP IV
activity, distribution in 255–258
antiserum on hepatocyte spreading 258
antiserum, precipitation of 263, 264
anchorage to plasma membrane 261, 262
biochemical properties 260
polypeptide fragments 261
surface activity comparison with hepatoma 259, 266
LTE_4, ethanol on oxidative degradation 314–317
PRPP synthytase from 147
isoforms of 148
regenerating
DNA polymerase a localization 119
ribonucleotide reductase holoenzyme distribution 119
ribonucleotide reductase subunit formation 113
cell cycle control 116, 117, 120
90kDa M1 subunit formation 116
T51B cells ribonucleotide reductase subunit location 119
pheochromocytoma cells PC12
culture 94
tyrosine hydroxylase activity, agents affecting 105
spleen, DPP IV in 265
Walker carcinoma cells
in vitro growth 202
phosphorylation of S6 in 208
PKC and cell proliferation inhibition 208–210
synergistic inhibition of proliferation 210, 211
Reductase kinase, phosphorylation of HMG CoA reductase 65, 69
Reductase kinase kinase
activation 66
phosphorylation of reductase kinase 65
Regulation through signal proteins
of cell growth 359
of cell differentiation 359, 362
Retinoic acid
cytotoxicity in HL-60 cells 341–343
differentiation induction in HL-60 cells 342, 343, 345
guanosine on 345
tiazofurin synergism in 3924A cells 345, 346
Rhodopsin, HMG CoA reductase and 72
4-(β-D-Ribofuranosylamino)

thiadiazolo[5,4-d]pyrimidine
structure 168
Ribonucleotide reductase (EC 1.17.4.1)
activity
DAP on 134–136
DAPdR on 134–136, 138, 141
increase in cancer cells 338
inhibition and cell cycle block 132
gene sequences similarity to ornithine decarboxylase 83, 84
holoenzyme
activity cell cycle regulation 114
mammalian 113, 114
operational site 114, 118–120
structure, *E. coli* 113, 114
M1 subunit
antisera 118, 120
catalytic sites 114, 117
for ADP and CDP 117, 118
separation of 115
control of holoenzyme activity 114
90kDa subunit in immortalized cells 117
structure 114
M2 subunit structure 114
subunits functional in
BHK-21/C13 cells 114
clam 114
Ehrlich ascites cells 114, 115
L1210 cells 114
MDBK cells 114
MOLT-4F cells 115
regenerating rat liver 113, 115
sea urchin 114
S49T cells 114
3T3 cells 114
TA3 cells 114
Ribonucleotide synthesis, PRPP and
adenine tracer 156
ARPP inhibition 174
bicarbonate tracer 156
formate tracer 156
glycine tracer 156
labeling stimulation by EGF + insulin 154–156
mitogen induced 156, 158
Mg^{2+} on 160, 161
MRPP inhibition 174
MRPP on initial rate 175
uracil incorporation by non-PRPP pathway 155
Ribose 1-phosphate from inosine 152
Ribose 5-phosphate, PRPP controlled flux into nucleotides 152–157
EFG + insulin stimulation on 155–157
[Ribosyl-^{14}C]inosine
advantages in PRPP studies 151
metabolism of ribose moiety 152
preparation 149
time course of label distribution in fibroblasts 152, 153
EGF + insulin stimulation 153, 154
RNA synthesis in L1210 cells, DAP and DAPdR on 135

Saccharomyces cerevisiae
alcohol dehydrogenases
analysis of sequences 225–229
site-directed mutagenesis 231
subunit contact sites 233
culture 285
enzyme assays in 285, 286
growth of 286, 287
enzyme activities during 287–290
PFK-2 and FBPase-2 in 283–304
Salmonella typhimurium PRPP synthetase from 147
Schizosaccharomyces pombe alcohol dehydrogenase analysis of sequence 225
Sea urchin ribonucleotide reductase subunit formation 114
Selenazofurin inhibition of carcinoma and leukemia cell lines 190
Serotonin on tyrosine hydroxylase 98
Signal transduction in growth and differentiation 26
protein kinase C and 31
Spermidine, ornithine decarboxylase control of 81
Spermine, ornithine decarboxylase control of 81
Spheroplasts of *L. casei* 7
Staurosporine
inhibition of cell proliferation 208, 209, 213
synergy with *cis*-DDP 210, 211
inhibition of protein kinase C 208, 209, 213

Sterol synthesis inhibition by compactin 56
Succinate dehydrogenase (EC 1.3.9.1)
regulation 271–279
malate oxidation 271–273
kinetic model 275
kinetic parameters 274
suicide inhibition 276
Synergism
8-aminoguanosine 134
antifolates 17, 18
BM41440 210, 211
CPG_2 323, 329
DAPdR 134
DDATHF 16
cis-DPP 210–212
EFG 153–157
ET-18-OCH_3 210
HN_2 211, 212
insulin 153–157
metoprine 16–18
PDDF 16–18
PKC 210–212
quercetin 210–212
retinoic acid 345, 346, 354
staurosporine 210, 211
tamoxifen 210, 211
tiazofurin 345, 346, 354
TMTX 16–18, 323, 329
Synvolin (Simvastin)
clinical studies 55
structure 54
Syrian hamster kidney HMG CoA reductase amino acid sequence 70

TAD (thiazole-4-carboxamide adenine dinucleotide)
accumulation in leukemic cells 339
active metabolite of tiazofurin 338
formation and tiazofurin sensitivity 338
inhibition of IMP DH in human AML 339
inhibition of IMP DH in rat 3924A cells 339
Tamoxifen
inhibition of cell proliferation 208, 209, 213
synergy with *cis*-DDP 210, 211
inhibition of protein kinase C 208, 209, 213
Tertiary structure in proteins
alchohol dehydrogenases 224–235
divergence 222
model building principle 233
predictive algorithm for 230
tryptophan synthetase 223
2,3,7,8-Tetrachlorodibenzo-p-dioxin 9TCDD) activation of cytochrome P-450 239
Tetradecanoyl phorbol acetate (TPA)
activation of S6 kinase 208
on inhibition of protein kinase C 206, 207
N,N,N,N'-Tetramethyl-p-phenylenediamine (Wurster's blue, WB) in malate oxidation assay 272, 273, 276
Thiocarbamates
anticarcinogenic properties 238
phase II enzyme activation 239, 241
6-Thioguanine
cytotoxicity to proliferating and plateau-phase cells 191, 192
inhibition of carcinoma and leukemia cell lines 190
Thymidine
incorporation into APP treated cells 196, 197
protection against antifolate combinations 16
Thymidylate synthase (EC 2.1.1.45)
assay 14
in folate metabolism scheme 15
inhibition by PDDF 13
synergistic inhibition by PDDF and DHFR inhibitors 17, 19
Tiazofurin (2-β-D-ribofuranosylthiazole-4-carboxamide)
allopurinol combination therapy, case studies 348–350
conversion to TAD 338
cytotoxicity in HL-60 cells 341–345
cytotoxicity in rat 3924A cells 342
decrease in *ras* oncogene expression 338, 341, 345, 351–353
dose considerations in leukemia treatment 346
evidence for effect on human myelocytic leukemia 337–339, 354

induced differentiation in HL-60 cells 342–345
guanosine on 345
induced differentiation in human leukemia 348, 350, 351
induced differentiation in K-562 cells 351
guanosine on 352
induced differentiation, markers of 352
inhibition of leukemia cell lines 190
inhibition of IMP DH 335–354
in K562 cells 341, 351
myelosuppression by 339
on GTP concentration 339, 352, 353
on murine tumors 338
on rat 3924A hepatomas 337
retinoic acid synergism in rat 3924A cells 345, 346
targets of 352, 353
Transcription regulation growth factors and 360, 364
Transforming growth factor α(TGA-α) on human chromosome 2 83
Transforming growth factor β(TGA-β) cell differentiation and 362
7,8,12-Trimethylbenz(a)anthracene leukemogenesis Sudan III protection 238
Trimetrexate (TMTX)
combination with DDATHF 16
combination with PDDF 16–18
+ CPG2 combination chemotherapy 331
cytotoxicity in CCRF-CEM cell lines 323–332
synergism with CPG2 323, 329
drug concentrations on 330
on parent and resistant lines 326–328
on DHFR 13, 15
on PDDF cellular folate ratio 19
Tryptophan synthetase tertiary structure prediction 223
Tumor necrosis factor (TNF)
cell differentiation and 362
from leukocyte conditioned medium 363
Tyramine on tyrosine hydroxylase activity 100
Tyrosine on tyrosine hydroxylase 98
Tyrosine hydroxylase [L-tyrosine, tetrahydropteridine:oxygen oxidoreductase (3-hydroxylating), EC 1.14.16.2.]
activity pH dependence 95–98, 102, 103
activity regulation 93
amino acid sequences, species comparison 104, 105
antibody 95
assay 94, 95
catalysis of L-tyrosine to L-DOPA 93
L-DOPA on 98
DOPAC on 98, 100
dopamine on 96–99
DOPEG on 98, 100
end-product control 98
epinephrine on 98
from pheochromocytomas 105
human, regulation of 104–107
inactivation/stabilization model 101
modulation of activity 100–104
norepinephrine on 98
phosphorylation of 101, 103–105
phosphorylation sites 104, 105
polyanions on 100–102
protein kinases on 93, 96, 97, 100–107
protocatechuic acid on 100
purification 94
pyrocatechol on 100
serotonin on 98
two-step activation 103
tyramine on 100
Tyrosine kinases
GF activation 360
oncogene association activity 360

Ubiquinone reduction 271
UDP-glucuronosyltransferase anticarcinogenic action 239, 247
Uracil nucleotides synthesis stimulation by EGF + insulin 157
Mg^{2+} on 161
Uridine
incorporation into APP treated cells 196, 197
on MRPP toxicity 177, 178
+ pentastatin + adenine protection from APP 193, 194
Uridine kinase, MRPP on 175, 176

Vidarabine-5'-phosphate (AraAMP) with

pentastatin inhibition of carcinoma and leukemia cell lines 190

Yeast *see Saccharomyces cerevisiae*